THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JUNE, 1899.

Army Veterinary Department.

THE future medical care of the horses of the British Army is one well worthy of consideration by those in authority.

The officers of the Army Veterinary Department have made a reasonable request to the Secretary of State for War, that the prefix of "veterinary" before their rank should be abolished, and that they should hold military rank, the same as officers in other departments of the Army. Many cogent reasons have been advanced in support of this request, but as far as we know, the Secretary of State for War has not given any good reason for refusing the request.

The matter is a serious one. The Army Veterinary Department has not gained in popularity during the past few years, and this refusal of the Secretary for War will still further decrease its popularity.

We shall not be surprised by hearing very shortly that there are vacancies in the Department, but no candidates to fill them. If the Secretary of State for War desires to obtain the cream of the younger members for the A.V.D., he may rest assured that under the present conditions he will only get some of the other portion of the milk.

The officers of the Army Veterinary Department may rest assured that no right-minded young member of the profession will do such a thing as to, what is called among the working classes, "become a blackleg."

Vet.-Colonel H. Thomson, Principal Veterinary Officer in India, arrived in this country on the 6th inst., on leave of absence. The following officers also arrived from India, on leave of absence :—Vet.-Captain E. H. Hazelton, Vet.-Lieutenants G. M. Williams, A. E. Clarke, and W. M. Millar.

Vet.-Major G. F. Davis left the Curragh to be stationed at

Aldershot, and Vet.-Lieutenant H. M. Durrant proceeded to Okehampton for duty from Woolwich.

The period of foreign service for veterinary officers has been reduced from six to five years.

The undermentioned Vet.-Captains to be Vet.-Majors, dated May 17th, 1899:—Edmund Day, Charles Rutherford, F.R.C.V.S., Kay Lees, F.R.C.V.S.

HONOURS.

H.M. the Queen has been pleased to grant authority that the undermentioned officers may accept and wear the Insignia of the Imperial Order of the Medjidie, or Osmanieh, as stated below, conferred on them by H.H. the Khedive of Egypt, and authorised by His Imperial Majesty the Sultan of Turkey, in recognition of their services in Egypt and the Soudan during the recent campaign:—

Order of the Medjidie: *Second class*—Vet.-Captain G. R. Griffith, D.S.O.; *Order of the Osmanieh: Fourth class*—Vet.-Lieutenant W. E. Russell.

Extract from A.G. of 12th May, 1899.

We are pleased to hear that the merchants and farmers of Port Elizabeth recently presented Mr. Duncan Hutchem, F.R.C.V.S.—Cape Government Veterinary Surgeon—with an illuminated address and a purse of 300 guineas, and that at the same time the provincial people presented him with a silver salver and a purse of 100 guineas, for his great and valuable professional services in the prevention of rinderpest.

PASTEURELLOSIS.

Ovoid Bacteria.

AMONG the numerous microbic diseases there exist certain groups whose specific agents possess certain general features of resemblance to one another. There exists quite a series of diseases whose germs form a group called "*ovoid bacteria.*" All these specific germs, which give rise to about thirty different kinds of diseases, are not coloured by Gram, not one of them causes sugar to ferment or gelatine to liquefy; but they all possess the peculiarity of localising their action on

the intestine or the lung and of setting up in those regions lesions of septicemia hæmorrhagica. Starting from this point, Hueppe, discovering certain analogies between different diseases, classed them in a group called *septicemiæ hæmorrhagicæ*. M. Lignières very judiciously remarks that this peculiarity is not exclusively confined to ovoid bacteria, and that consequently this mode of classification falls to the ground. On the other hand, Galtier gave these diseases the name of pneumo-enterites. Unfortunately this peculiarity also is far from being constant. M. Lignières is of opinion that a classification of these diseases in order to be tenable must be founded on the essential characteristics of the microbes themselves, and not on the appearance or frequency of certain lesions; this can be deduced only from a serious comparative study of each of the specific ovoid bacteria. M. Lignières has for his part studied some of the microbes of the group of ovoid bacteria; among others the germs of *typhoid fever* of the horse, of *lombriz* of the sheep, and of *enteque* of bovines (*vide* VETERINARY JOURNAL for January, 1899, p. 76). The conclusions he draws are: "*In the case of all three, difficulties are experienced in finding them in the body. All of them grow with some difficulty in the ordinary media, all of them can be coloured, but less easily than the coli-bacillus, by the various aniline colours; not one of them takes on Gram; not one of them curdles milk; not one of them grows on potato; all of them are immobile.*" Such are their specific and constant characteristics. All their pathogenic qualities are clearly differentiated. It is in this way that the typhoid cocco-bacillus sets up in the horse a typhic disease which is found in neither the ox nor the sheep. The antityphic serum of the horse, which is an antidote to typhoid fever in the horse, is quite ineffectual when injected to combat *lombriz* or *enteque*. We have therefore three different races of the same stock, races which possess distinctive characteristics. Now these three genera form part of the genus *Pasteurella* of *Trévison*. M. Lignières poposes hence to create among the diseases caused by ovoid bacteria a special group, to which he gives the generic name of *Pasteurelloses*. This group comprises: Pasteurellosis equina (typhoid fever, pneumonia, etc.) Pasteurellosis ovina (*lombriz pneumo-enteritis*, septicemia, hæmorrhagica, etc.), and Pasteurellosis bovina (*enteque*), in all their manifestations.

To sum up, M. Lignières establishes a classification of the diseases produced by ovoid bacteria, not basing his classification upon the lesions produced, but starting from the charac-

teristics proper to the specific germs. He further announces a second group: the *Salmonelloses*, caused by germs of the genus *salmonella* (from the name of the author who first studied the ovoid bacterium of hog-cholera or pneumo-enteritis of the swine). The characteristics of the germs of this group are: "Isolation, culture, and colouring are relatively easy; it does not take on Gram, does not curdle milk; grows on potato, on gelatine without liquefying; is immobile."

Pasteurellosis Bovina.

Last year M. Lignières was commissioned to go and study in Argentina the diseases which attack cattle and cause colossal losses in that country. He there met with two diseases called in that country "Diarrhœa," and "Enteque," which he considers as one and the same morbid entity caused by a bacterium of the genus Pasteurella, and which for this reason he proposes to call *Pasteurellosis bovina.*

Symptoms and forms of the disease.—It is a disease raging permanently among all the bovines, with the exception of sucklings in certain marshy localities.

Intestinal form.—In subjects of 12 to 24 months old, generally, there is fetid diarrhœa without rectal tenesmus, febrile symptoms, no swelling, and great emaciation of the subjects, at the end of the malady they are reduced to skeletons, respiration normal, and the pulse is of an anæmic character; such are the important symptoms. Duration of the disease three to four weeks. Mortality, about one-fifth of the animals attacked. The *cachectic form* lasts for a very long time, it may last for years, and ends in death. Whether the subject have shown signs of diarrhœa previously or not, the final result is etisia and profound anæmia. In the case of those animals in which diarrhæa is not observed, the disease commences with "pica," the animals having a longing to eat bones; then they gradually grow leaner and leaner, the muscles become atrophied, in many cases there are articular localisations, in the form of large distorting anthrites.

Acute form and localisations.—The animals die in one or two days, having first manifested diarrhœa and a temperature of more than 40° with signs of pneumonia, pleurisy, etc. This form is pretty rare.

Lesions.—These differ exceedingly, according as they occur in young or old animals. *In young animals* they are principally intestinal. It is especially the glands of the small intestine which are attacked, and among others Peyer's glands. The intestinal canal contains a prodigious number

of germs. The vessels are quite sound. The lymphatic ganglia (bronchial and mediastinal) are soft and succulent, sometimes even hypertrophied and with hæmorrhagic foci. Such are the essential lesions. In the acute form, the lesions are analogous to those of anthrax. *In adult bovines* the lesions attack the intestinal tube slightly. If there is arthritism, the articulation is surrounded by fibrous tissue, ligaments often ossified at their points of insertion, synovia non-purulent, articular distortion. The essential lesions attack the lungs and the arteries. In the lung hard osseous kinds of tumours are met with, with areolæ varying in size from a pin-head to a walnut. In the middle of the sound tissue, in the very centre of this osseous stratification, is encountered a budding of the capillaries of the alveolar wall. These small tumours may run together and then form veritable ossific centres. In the arteries we meet at an advanced period with growths, some fibrous or cartilaginous, others strongly impregnated with calcareous salts, which give the vessel its atheromatous appearance. The smaller vessels are almost obliterated. As to the great arteries, the lesions show themselves principally on the level of the point of bifurcation. These lesions may even exist on the sigmoidal and auriculo-ventricular valvules. These arterial lesions, so well described by M. Lignières, are almost constant, whilst the pulmonary lesions may be a-wanting.

The *horse* and the *sheep* may be attacked. The former always takes the chronic form and never shows any pulmonary lesions. On the other hand, there may frequently be found in it a hygroma of the serous purse (sac) of the cervical ligament at the level of the atlas; this, in many cases, in consequence of complications, brings on death by compression of the bulb.

Etiology and pathogeny of bovine Pasteurellosis.—The germ is an ovoid bacterium of the genus *Pasteurella* which is found in the three forms which we have just summed up. For the descriptive details of this germ, and for an account of the inoculations performed, the reader must be referred to M. Lignières' remarkable work. It should, however, be said that the author has experimentally reproduced the malady in the ox by inoculation with cultures of the specific microbe. Further, the identity of the germs found in the different lesions has led M. Lignières to unite these different different diseases clinically under one and the same appellation, Pasteurellosis bovina. The author is convinced that infection takes place by way of the digestive organs.

Prophylaxy and Treatment.—M. Lignières believes he has found a vaccine which, when injected into the healthy subject, will render it immune. He even announces that he hopes to be in a fair way to produce a curative serum. As for treatment, he says he has obtained excellent results by injecting intravenously a mixture of 400 c.c. of defibrinated blood and 500 c.c. of distilled water. He made two injections into each of the subjects attacked, and obtained a very marked amelioration, followed by cure.

M. Moussu, Professor of Bovine Pathology at the Alfort School, after comparison of certain lesions of a chronic diarrhœa of bovines which prevails in certain departments of France with the lesions reported by M. Lignières, is inclined to believe in the identity of the two diseases. The lesions are apparently the same, as well as the symptoms observed in the subjects which M. Moussu was able to examine. We shall soon be definitely informed on this point. Such is, briefly, the important discovery which M. Lignières, M. Nocard's brilliant pupil, has just made.

Pasteurellosis Ovina.

This disease, known in Argentina under the name of "Lombriz" (*lumbricus*), has been made the object of a special study by M. Lignières. On his return to France, he made investigations as to whether this disease of the sheep did not exist on the continent, and has arrived at this result: that the malady certainly does exist in France and in other neighbouring countries; that, further, this disease shows the greatest analogy with the pneumo-enteritis described by Galtier, the enzootic pneumonia described by Liénaux, and the septicæmia hæmorrhagica described by Conte and later by Besnoit and Cuillé. This disease, which works great havoc in Argentina, is called "Lombriz," from the fact that worms are almost invariably met with in the autopsies: *strongylus contortus* in the fourth stomach and *strongylus filaria* in the bronchi. But M. Lignières, struck by certain characteristics of the disease, suspected the existence of specific germs, and made numerous researches to discover the truth. He ended in discovering a cocco-bacillus, akin to that of Pasteurellosis bovina. This cocco-bacillus he puts under the genus *Pasteurella*, whence the name *Pasteurellosis ovina* which he gives this disease. The malady described by M. Lignières shows itself in three forms: chronic, sub-acute, and acute. The *chronic* and most frequent form attacks principally young subjects after weaning, more rarely the adults

which are either more resistant or have acquired an immunity produced by a former attack ; it attacks in the same degree subjects nourished in the sheepfold or in sheep walks. The sympt ns are those of progressive anæmia ending in weakness, and leanness ending in muscular atrophy, falling-off of the wool in tufts, appearance of the œdema called " rot," sometimes of pneumonia, of synovites, of paralysis, and of attacks of intermittent fever. The macroscopic lesions may sometimes be wanting. But one often meets with effusions in the peritoneum, the pleura, the pericardium, sometimes with pneumonia, bronchitis, inflammatory lesions of the articulations and of the tendinous synovial membranes ; lastly, worms are almost always found in the bronchi and in the fourth stomach.

The *sub-acute form* differs essentially from the preceding only in a more rapid evolution (three to four weeks) of the disease, and consequently in this case the subjects have not had time to grow thin to such an extent as in the chronic form.

In the *acute form* the subjects die quickly in three to five days, temperature 41° to 42°, mucous membranes congested, frequent dull colics, with plentiful spumous or even bloody diarrhœa. The lesions are septicemic.

In his work, M. Lignières describes excellently the specific cocco-bacillus, the colourings, cultures, inoculations of guinea-pigs, rabbits, mice, white rats, pigeons, fowls, dogs, horses, asses, and oxen. We can do nothing but refer our readers to this excellent work itself. We will only lay stress on this fact—that inoculation of the sheep reproduced the natural disease with all its characteristics and in its three forms. This experiment of M. Lignières was therefore decisive, and it has the great merit of the discovery, in the midst of a number of microbes, of the specific germ which, when cultivated and injected into animals, reproduces the typical disease. He has also proved, by a series of conclusive experiments, that infection takes place by way of the digestive tube. The author has tried to determine the part played by the zoological parasites, and has arrived at this conclusion : that if the parasites in great numbers may cause death mechanically by producing a veritable obstruction, as a general rule their part must be considered as a secondary one, and their action be included in this fact : " All causes injuring the integrity of the protective epithelia favour the passage of the various microbic species into the organism."

Diagnosis is easy enough in the acute form, in which it can

be mistaken only for violent anthrax; whilst in the sub-acute and chronic forms a differential diagnosis must be established sc. between the disease proper and verminous diseases; but the attacks of intermittent fever are an essential point for the first-named. *Prognosis* is a serious matter in the rapid forms, and in the chronic forms with pulmonary localisations. On the other hand, when there is no diarrhœa or localisations the animals pretty often get better of the disease, especially when they have vast spaces at their disposal. *Prophylaxy.*—Isolation of the subjects attacked; disinfection of the infected places; dispersion of the flocks over vast tracts for pasturage. *Vaccination.*—M. Lignières has sought and obtained a vaccine by the same method as for vaccination for typhoid fever of the horse. He proposes to this end that diseased subjects should not be vaccinated, this operation being deprecated by him. In his opinion the only solution is "vaccination of the young lambs which appear to be sound and robust. The sheep may be vaccinated at any age in the untouched flocks; in those which are slightly attacked immunisation will still be possible a few days before weaning, whilst it should take place in the three or four weeks after birth in a flock where there are many diseased."

M. Lignières, after a critical review of different treatises on diseases of the sheep discovered and described in later times, lays down the following conclusions: "Pasteurellosis ovina is a microbe disease already described under the name of pneumo-enteritis, enzootic pneumonia, hæmorragic septicemia, caused by a cocco-bacillus of which we have tried to determine the exact morphological and biological characteristics, and which up till now had baffled all research. It rages in an acute, sub-acute, or chronic form (Galtier, Liénaux, Conte, Besnoit, Cuillé, and Lignières). It often coexists with a verminous disease (Lignières, Besnoit, and Cuillé). Pasteurellosis ovina may evolve slowly in the patients, cachectize them, and cause death *without appreciable localisations* (Lignières). In this case the presence of worms in an often considerable quantity tends to make one admit the existence of a verminous phthisis."

Pasteurellosis Equina, Typhoid Fever, Pneumonia, etc.

It will be recollected that under the name of Pasteurellosis equina I comprise all the forms of the typhoid disease caused by the cocco-bacillus of which I gave a description at our meeting of 22nd July, 1897. Since that time I have eagerly seized all opportunities of throwing light on certain parts of the question which remained obscure. My new observations

have been collected in France and especially in Argentina, where the classic form of the fever is observed much more frequently than here ; besides, as horses there are far from dear, I was able to experiment in the most favourable circumstances. The specific cocco-bacillus of Pasteurollosis equina is found in the Argentine Republic also. A short time after my arrival at Buenos Aires, I was taken by our *confrere*, M. Even, who was acquainted with my researches on typhoid fever, to visit the horses of a tramway company of La Plata, in which so grave a disease had just broken out that in less than three days working of the line had to be stopped for want of horses. The disease had begun suddenly on the 6th January in a huge stable containing 105 "criollo" horses (small horses of the country, remarkable for their energy and excellent qualities). On the 7th there died nine ; on the 8th, 16 ; from the 9th to the 10th, four. We arrived on the 11th and found about 15 patients, some of whom showed the typical symptoms of typhoid fever : considerable depression, somnolence, vacillation in walking, swollen eyelids, eyes running, mucous membrane of a mahogany red, with some petechiæ, hind legs slightly œdematous, pulse small and slack, respiration accelerated, temperature 40° to 41·5°. One of them, in which we could diagnose pleuro-pneumonia, was very bad and was slaughtered. On autopsy the following lesions were found : Inflammation of the peritoneum, of the pleuræ, and of the pericardium, with pretty limpid and slight effusion. On the serouses could be seen a few small hæmorrhagic spots. The spleen was large and soft ; the kidneys were congested and much more friable than in the normal state ; their capsule was surrounded by a russet-coloured œdematous serosity. The liver was slightly yellowish, whilst the blood had an almost black tinge. The intestines were impaired and presented in a slight degree the lesions of intestinal congestion. The walls of the great colon were thickened, and the mesenteric vessels surrounded by a plentiful yellowish œdema. As to the lymphatic ganglia, they were hypertrophied and hæmorrhagic. In the lungs were discovered hepatised foci whose size did not exceed that of a small potato. Bacteriological researches led to the isolation of a microbe, of which I briefly give the principal characteristics : a microbe of cocco-bacillary form, scarcely as large as that of fowl-cholera, capable of assuming the bacillary form, immobile, not taking on Gram, colouring pretty badly with methylene blue, safranine, or vesuvine, but better with the help of gentian-violet and rubine. The first cultures are difficult to obtain,

and, even when the microbe is accustomed to the artificial media, it grows pretty discreetly in it, making turbid the whole of the medium if peptonised bouillon is used, or setting up small transparent bluish colonies on gelose and gelatine; on this latter medium, which is not liquefied, the culture is very uncertain and very slow. Milk is never curdled and potato gives no culture. The microbe grows much better in the air than in a vacuum, and after culture in bouillon an odour quite peculiar to it may be observed. It is very pathogenic for the guinea-pig, rabbit, mouse, ass, and horse, less for the sheep, carnivora, the pig, and the ox, and very little for the white rat and birds. It will therefore be seen that these characteristics may certainly be referred to the typhic bacillus. I had not noted at the time of my first communication the peculiar odour of the cultures in peptonised bouillon nor the possibility of seeing a slight and slow culture taking place in vacuo; it was later that I found out these peculiarities. I have been able to isolate the same microbe in about fifteen subjects taken from different localities and presenting various forms of the typhic disease. For example, I saw in the infirmary of Mr. Even a horse which had for some days past shown want of appetite, slight dejection, and epileptiform crises, which caused falls to the ground and rolling of the eyeball. After each crisis, the animal did not seem dangerously ill; these crises, however, kept on renewing themselves more and more frequently, and on the third day the patient succumbed without anyone having been able to establish a diagnosis; we only knew that the subject came from a stable infected with typhoid. Bacteriological researches showed the presence of the typhic cocco-bacillus in a relatively plentiful quantity in the blood —an exceptional occurrence. I have also met with the typhoid form of Pasteurellosis in the Pampas, in horses brought up in a wild state. I have made a certain number of inoculations, which have contributed to confirm the first experimental results. Nothing is easier than to obtain almost all the natural forms, especially if young horses are used. The gastro-intestinal localisation is very easily produced by intro-venous inoculation of $\frac{1}{2}$ c.c. of culture into a guinea-pig's peritoneum, or 3 or 4 c.c. of culture in bouillon peptone. At the same time there are always grave general symptoms to go by: depression, muscular tremblings, shaky walk, mahogany-coloured mucouses, swollen limbs, accelerated pulsations and respiration, and rise of temperature. I have likewise produced the fatal form, pleurisy, pericarditis, ner-

vous forms, ophthalmia, icterus, and pneumonia. As in the natural disease, one may with impunity inoculate under the skin of the horse some cubic centimètres of the blood of patients or dead animals; further, sowing has always remained sterile, except in a few cases, in which death ensued in 24 or 36 hours. All these researches, then, confirm the specific nature of the typhic cocco-bacillus. The experimental inoculations are, I think, very demonstrative. They show that one may easily reproduce the typhoid form of Pasteurellosis equina, and most, if not all, of the localisations which clinical medicine had already brought under our notice, under the name of complications. It will, perhaps, be remembered how I obtained two cases of pneumonia of the horse in France, one by introvenous injection, the other—much more typical—by subcutaneous inoculation of a virus which brought on a double hyper-acute pneumonia, which proved mortal in four days, with almost pure cocco-bacillus in the lung.

I sum up this first part of my communication by saying the classic form of this typhoid fever is a Pasteurellosis caused by special, well-marked cocco-bacillus. Experiment, along with clinical surgery, shows us the possibility of making intestinal, serous, articular, nervous, pulmonary, etc., localisations with this specific cocco-bacillus.—*Bulletin de la Société Centrale de Médicine Vétérinaire.*

[We are of opinion that Pasteurellosis is not an uncommon disease in Great Britain, as we have frequently recently had specimens of organs sent us which have exhibited the lesions described above, and containing the cocco-bacilli.—EDITORS.]

FIFTY-SIXTH ANNUAL REPORT OF THE ROYAL COLLEGE OF VETERINARY SURGEONS FOR THE YEAR 1898-9.

THE Council of the Royal College ot Veterinary Surgeons present the fifty-sixth annual report of their proceedings for the year 1898-9 to the members of the profession.

Election of Members of Council.

The annual general meeting was held, in accordance with the Supplemental Charter, on Wednesday, June 1st, 1898, when the following gentlemen were declared elected members of council in the place of those who retired by rotation, viz.

Mr. Jno. A. W. Dollar, General Sir F. Fitzwygram, Mr. R. C. Trigger, Professor J. Penberthy; Messrs. A. W. Mason, J. Abson, J. Fraser, Veterinary Colonel F. Duck, C.B., and Mr. Charles Allen.

A vacancy arose owing to the resignation of Veterinary Captain R. Butler, who had been appointed for service in India. The ballot having been taken, Mr. R. C. Trigger was duly elected to fill the vacant place on the council.

Election of Officers.

At the first meeting of council, held on Friday, July 1st, Mr. A. W. Mason was duly elected President for the ensuing year, and Professors Penberthy and Dewar, Messrs. Lawson and Elphick, Professor W. O. Williams, and Mr. J. Abson, to be Vice-Presidents.

Mr. F. W. Wragg was unanimously re-elected treasurer, and Mr. A. W. Hill secretary and registrar.

Alterations of, and additions to, Bye-laws and Regulations.

The council has again considered the subject of Bye-law 67, with the result that the length of study of a rejected student has been determined. The bye-law will now read as follows: —

> No rejected student shall be eligible for re-examination unless he produce satisfactory evidence that he has attended a full term of ten weeks at a veterinary college between the date of rejection and re-examination.

Bye-law 113 has also been altered, and will now read as follows:—

> That advertising by veterinary surgeons, *or causing or permitting other persons to advertise for them, whether by paid advertisement or by editorial or other notice*, in the public press, or distributing, or causing or permitting to be distributed, circulars, books, or cards relating to their professional attainments, or abilities, or charges, or in respect of medicines or appliances prepared or sold by them, amounts to conduct disgraceful, in a professional respect, within the meaning of Section 6 of the Veterinary Surgeons Act, 1881.

Professional Examinations.

Examinations were held in May and December in Scotland, and in July and December in London, at which 570 students were examined and 103 admitted members of the profession. The following are the number of candidates examined, passed, and rejected in each class:—

Three Years Course.

	Examined.	Passed.	Rejected.
Class A	— ..	— ..	—
Class B	23 ..	6 ..	17
Class C (Oral) ..	52 ..	33 ..	19
Class C (Practical)	66 ..	39 ..	27

Four Years Course.

Class A	141 ..	83 ..	58
Class B	103 ..	73 ..	30
Class C	103 ..	77 ..	26
Class D	82 ..	64 ..	18

Fellowship Examination.

Three examinations were held in London during the year for this degree in May, July, and December, with the result that the following gentlemen were admitted Fellows, viz :— Messrs. T. W. Cave, F. W. Melhuish, F. W. Anderton, J. B. Young, W. A. Stainton, W. A. Dellagana, and R. C. Tennant.

FitzWygram Prizes.

Four candidates competed for these prizes. The written and *vivâ voce* portions of this examination were held in Newcastle-on-on-Tyne on July 25th and 26th, with the following result :—

1st Prize of £50 awarded to Mr. W. Jowett, of the New Veterinary College, Edinburgh.

2nd Prize of £30 awarded to Mr. T. Wolsey, of the Royal Veterinary College, London.

3rd Prize of £20 was not awarded, as sufficient marks were not obtained by either of the other candidates.

The examiners were Messrs. G. Elphick and J. B. Wolstenholme.

Steel Memorial Medals.

The council, after due consideration, awarded these medals for this year to Dr. Geo. Fleming, C.B., and Professor Wm. Williams, Principal of the New Veterinary College, Edinburgh.

Walley Memorial Fund.

The Council of the Royal College of Veterinary Surgeons has consented to accept the trust of the above fund. The

deed of trust has been executed by the council, and its purport is briefly as follows:—The annual income—derived from the fund (£309 1s. 4d.) now invested by the trustees in consols—is every year to be given to the successful student at a special examination by the Royal College of Veterinary Surgeons. The examination is open to all students of all schools now or hereafter affiliated subsequent to the immediately preceding October who have passed Class "C" four years course or the corresponding examination for the time being. The subjects are pathology, materia medica, and hygiene. The written examination is to be not less than two hours. The examination is to take place simultaneously in London and Edinburgh, and in Dublin as soon as a college is established there. There is power given to the Royal College of Veterinary Surgeons to make rules for the conduct of the examination, and this has been referred to the examination committee to draw up and submit rules to the council.

State-aid Grants.

The council has had before it the subject of State-aid grants, having heard that the Government had lately arranged to allow the Law Society an annual grant of £2,500 towards their expenses in connection with the discipline of their members and prosecution of unqualified persons. It had also been ascertained that on July 20th last, through some member of Parliament, the medical council asked for a similar grant, but the Chancellor of the Exchequer said that inasmuch as solicitors paid a large annual duty to the Government they had some right to expect aid, but it did not apply to professions which did not contribute. Although it was thought that this answer would apply to the veterinary profession equally with the medical, yet the matter was so important that some notice should be taken, and after some discussion it was resolved that the general medical council be approached with a view to the Royal College co-operating with them in obtaining a grant of money, and the following answer has been received from them:—"The Executive Committee have considered the letter of the Royal College of Veterinary Surgeons of October 18th, 1898, and do not see their way to advise the council to accede to the request therein contained."

Registration Committee.

There have been 148 cases before the Registration Committee during the past year, of which 22 were old cases and

126 were new cases. There have been 85 complaints against members of college or registered existing practitioners for advertising, some of which were not approved, or were not of sufficient importance to be brought before the council; in the other cases undertakings have been given, and the council are happy to be able to report that in no instance has it been necessary to proceed to severe measures. There have been seven cases against members for unprofessional conduct, and the council regret to say that it was found necessary to remove the name of a member of college who had been convicted of fraud in connection with a horse insurance. In the other cases it was found either that there was no case or such as only to warrant a censure and caution; one case is still under consideration. There was only one charge against a member for covering, and he has given an undertaking to discontinue.

There were complaints against four registered practitioners for using letters implying membership of the college: in one case it was found that a bill-head had been printed by a printer without authority, and in the other three cases the offences have been discontinued, and apologies given. There have been 17 complaints against unqualified persons for pretending to be veterinary surgeons; in some instances there was not sufficient evidence to warrant a prosecution, and in others the offence was discontinued and apologies tendered. There has been one prosecution, when the offender was convicted and fined seven guineas and costs. There have been 26 complaints against persons using the words "veterinary forge" or "veterinary shoeing forge;" there have been two prosecutions, in one case the offender being fined £1 and 14s. 8d. costs, and the other 5s. and £5 costs. Two prosecutions are pending. In other instances the offences have been discontinued and apologies given, and in some cases offenders have disappeared altogether on receipt of cautionary notice.

There have been several cases of complaint against persons using the words "veterinary chemists," but the council are unable to take cognizance of them in the present state of the law.

Eleven gentlemen applied for restoration of their names to the Register, the same having been struck off in consequence of non-compliance with the requirements of Section 5, Subsection (4) of the Veterinary Surgeons Act, 1881. Satisfactory evidence having been given in each case, the names were ordered to be restored, except in the case of one gentleman who died between the date of his application and the matter coming before the council.

The council have had under serious consideration the question of disciplinary power over gentlemen holding the veterinary diploma of the Highland and Agricultural Society of Scotland, and the whole matter has been referred to a joint sub-committee of this college and members of that society, and is still under their consideration.

Parliamentary Committee.

The committee beg to report that there is at present before the House of Lords a Bill prohibiting certain professions being carried on by a company.

Registration of Colonial Practitioners.

The council have had three applications for registration as colonial practitioners: the first was from a graduate of Ontario Veterinary College, but after due consideration the council declined to accede to his application for registration, on the ground that the curriculum of his college did not, in their opinion, give his diploma equal value to that of the college. He has appealed to the Privy Council, and the matter is still pending.

The council have also had before them the application of a gentleman who had obtained registration as a veterinary surgeon in Victoria, but after due investigation have rejected the application, on the ground that the certificate of registration did not show either a course of study or that he had passed any examinations, his claim to registration appearing to be that he had been in practice for a certain number of years before the passing of the Act.

The council have also had before them the application of the Veterinary Board of Victoria for registration of gentlemen holding their veterinary diploma, subject to their undergoing further examination by this college, but the council, finding that an educational examination was not compulsory, and being further advised that they had no legal power to enforce the examination suggested by the Victoria Veterinary Board, but that the right of any applicant to registration depended upon the value of the diploma obtained in the colony, have declined the application.

Presentations.

Library—Presentations have been made by the following, during the year, viz., the editors of the *Veterinarian*, VETERINARY JOURNAL, *Journal of Comparative Pathology and Therapeutics*, *The Veterinary Record*, *Buletinnel si Memorale Societatei de Medicina Veterina din Bucuresti.*

Five interesting photographs of the foaling of a mule from Veterinary-Captain W. D. Gunn (Assistant Inspector-General C.V.D., Simla, India); Report of the C.V.D. of Bengal, India, by Veterinary-Captain F. Raymond; *Archives de Parasitologie paraissant tous les trois mois sous la direction de Raphael Blanchard; Army and Navy, Illustrated*, containing an article on Italian military horsemanship, by Peter Groen, Esq., from the Director-General A.V.D.; The General Statistics and Annual Report of the Army Veterinary Department for 1898; Manual of Bacteriological Technique, by Thos. Bowhill, Esq.; The Calendar of the Pharmaceutical Society; The Calendar of the Royal College of Surgeons of England; Calendar of the College of Preceptors; The Annual Report of the Board of Agriculture.

Museum.—Native shoeing instruments, from the Assistant Inspector-General, C.V.D., Merut, N.W.P., India.

Attendances of Members of Council.

	Council Meetings. Total No. 10.	Committees. Notices to attend.	Attendances.
Jno. A. W. Dollar	9	18	12
General Sir F. Fitzwygram	5	—	—
J. Penberthy	9	24	18
A. W. Mason	10	30	26
J. Abson	6	11	4
J. Fraser	6	17	13
F. Duck, C.B.	10	10	7
C. Allen	5	15	1
F. W. Wragg	10	26	24
I. McI. McCall	6	12	7
J. H. Carter	6	7	3
W. Williams	—	—	—
W. J. Mulvey	9	27	22
W. A. Edgar	7	17	3
W. O. Williams	8	19	10
A. C. Cope	6	10	4
J. Macfadyean	7	11	3
Geo. Elphick	6	7	3
J. D. Lambert, C.B.	3	6	4
Sidney Villar	4	15	6
E. S. Shave	5	14	4
J. F. Simpson	9	27	24
Geo. Wartnaby	9	15	12
R. C. Trigger	7	17	11
A. Lawson	7	11	8
Samuel Locke	6	10	7
Charles Hartley	8	10	6
J. R. U. Dewar	7	7	2
E. Beddard	4	18	1
W. Pritchard	3	14	8
W. T. J. Bower	7	15	11
W. F. Barrett	8	23	17

Obituary.

The Registrar's Report shows that the deaths of members of the college have been for the 12 months, 48. The names are appended as below:—

Name.	Address.
Aris, B. B.	Wellingborough.
Barker, Richard	Middlewich.
Chase, H. P.	Tiverton, Devon.
Collins, Thos.	Bradford.
Cook, B.	Swansea.
Cooper, J. Hixon	Dover.
Dalby, A. E.	Dorking.
Dardis, P. J.	Rathowen, co. Westmeath.
Edwards, H.	St. Albans, Herts.
Elmer, John	Limehouse.
Ferris, John	1st Class Army, A.V.D. (retired).
Flavell, G. F.	Sturminster Newton, Dorset.
Gibbings, H. D.	London.
Hampton, Peter	Arbroath, N.B.
Hancock, H. M.	Uxbridge, Middlesex.
Harris, Veterinary-Lieut. H. C.	
Haslam, Veterinary-Capt. A. J.	
Hornby, F. F.	Stockton-on-Tees.
Hooper, H. W.	Chelsea.
Hinde, W. H.	Downham Market.
Irish, J. H.	Cosham, Hants.
Johnstone, R. E.	South Shields.
Kinsey, J. R.	Macclesfield.
Lyons, D. F.	Rathkeale, co. Limerick.
McNair, Robert	Blairgowrie, Perthshire.
McOnie, P.	London.
Menzies, D.	St. Austell, Cornwall.
Mills, W. H.	Ardaragh, Newry.
Millward, H. H.	Wincanton, Somerset.
Michell, A. E.	St. Austell, Cornwall.
Oliver, A. C.	Worksop.
Poulton, C. G.	Coggeshall, Essex.
Poole, H. E.	Ramsgate.
Roberts, W. Irwin	Oswestry, Salop.
Rogerson, Edwin	Bedford.
Rule, H. M.	Buntingford.
Shawcross, A.	Warrington.
Thurston, James	Tressingfield.
Tait, John	Annan, N.B.
Taylor, T.	Bournemouth.
Thompson, H. O.	Edinburgh.
Tozer, Henry	Woolwich.
Walker, J. Davis	Stourbridge.
Whitemore, G. S.	Langport, Somerset.
Williams, T. R.	Caerwys, Flintshire.
Willows, S. F.	Cirencester.
Wyer, G.	Grantham.
Young, H. D.	Stewarton, N.B.

Auditors for 1898—9.

Messrs. J. Woodger and Warner were re-elected by the council, in accordance with the bye-law relating to auditors.

Cases.

A CASE OF FŒTAL TUBERCULOSIS IN A CALF.*

BY MAZYCK P. RAVENEL, M.D.

CASES of congenital tuberculosis are rare enough to have more than a passing interest; and though this method of transmission occurs so seldom that it may practically be excluded from our calculations in considering the spread of the disease, each undoubted case is instructive and worthy of record. In the human subject the first recorded case is that by Dr. A. Jacobi, of New York, observed in 1861, and reported at the Paris Congress of Tuberculosis in 1891. This is probably the first case observed in man or in the lower animals. Up to the present time, according to Osler ("Practice of Medicine," third edition), only 20 cases of congenital tuberculosis have been observed in man.

Among the lower animals, if we except experimental work, cases have been seen only in calves, and in them the number has been small. In only 17 fœtuses have tubercular lesions been found, and in only 12 of these have the tubercular bacilli been present. To these should fairly be added one stillborn calf and seven calves under five days old in which tubercle bacilli were found.

Some authors include a number of other cases, about 38 in all, of calves ranging from seven to 14 days old, as being cases of congenital tuberculosis; but, while not wishing to deny that they are properly classed as such, the proof has seemed to me to be incomplete. While these figures are not complete, they serve to show how seldom congenital transmission of the disease takes place under normal conditions.

The following case has come under my notice: During the latter part of 1898 a cow well advanced in tuberculosis was sent to the Veterinary Department of the University of Pennsylvania. On December 23rd, 1898, without any assignable reason, she aborted, the fœtus being about seven months old. A careful examination showed it to be normal, so far as gross changes were concerned, with the exception of the liver,

* Read before the Pathological Society of Philadelphia, February 23rd, 1899.

on which two whitish nodules about one-sixteenth of an inch in diameter were found. These suggested a tuberculous origin, though much doubt was felt as to their nature. They were crushed in a sterile mortar and emulsified. With the emulsion three guinea-pigs were inoculated—two intra-peritoneally and one subcutaneously. One of these pigs died on February 6th, 1899, the second February 16th, and the third, inoculated subcutaneously, was chloroformed February 22nd, 1899. The first two showed general tuberculosis of the abdominal organs with involvement of the inguinal and lumbar glands; the lungs were not involved. The third pig had an abscess at the point of inoculation, about the size of a filbert, filled with caseous material; there was a general tubercular adenitis, with caseous changes in many of the glands; the lungs, liver, spleen, omentum were markedly tuberculous, and a portion of the peritoneum, about one and one-half inches long by three-fourths of an inch wide, was studded with nodules. This is somewhat unusual, even when a pure culture is injected intraperitoneally. In each of these animals the tubercle bacillus was proven to be present in the lesions.

Unfortunately, I had not the opportunity of examining the placenta of the fœtal calf—a point of much interest and importance. I have since had the opportunity of holding a *post-mortem* on the mother, and made a careful examination of the uterus, which was free from tuberculous lesions; the disease was confined to the lungs and the lymph-glands of the mesentery.

THE FLESH OF CHOKED ANIMALS.

BY JAMES McPHAIL, M.R.C.V.S., INSPECTOR OF MARKETS, EDINBURGH.

IN connection with the increasing importance of meat inspection, this subject is well worthy of being brought under notice, for in the Edinburgh abattoirs and markets we very frequently get carcases sent into the sale, under veterinary certificate, as being perfectly fit for food, and which the inspectors have unhesitatingly to condemn, and this is not by any means pleasant for the certifying surgeon, or to the veterinary inspector on duty.

Too much care cannot be taken in respect to the carcases which a country veterinary surgeon may require to examine, for if they should come into a town in which a layman is inspector, if anything should be found wrong, the country veterinary surgeon is sure to be held up to ridicule by the

layman inspector. In regard to choking, it is a curious fact that in no other condition do we get such complete changes in the flesh of an animal, in so short a space of time, as we do in choking; acute tympany sets in very shortly after the fact of choking, and owing to the enormous pressure, the gases are not only absorbed by the blood and conveyed into the flesh, but pressed into the tissues mechanically, and there they remain.

When the suffering animal is slaughtered, perhaps *in extremis*, every part of the body is stinking, and also specially smelling of turnip, if it should be the cause of choking, or if not, then with the odour of intestinal gases, and such meat decomposes with extraordinary rapidity.

One carcase, which had been consigned for sale on a Monday, and which I seized, was on the Tuesday night absolutely putrid; there is no doubt that the presence of these gases in the flesh renders it noxious and harmful, and is the main factor in such a rapid decomposition.

The general appearance of a "choked" carcase, which has bled and been dressed well, is quite calculated to deceive anyone, but on being "ribbed" and cut up, one appreciates the extent of the damage:—The flesh is pale and slaty in colour, loaded with serosity, and having a typical odour of fermenting turnips, or of foul gases; this condition is especially noticeable in the thighs and in the shoulders; if an incision be made into the thick part of the thigh, or shoulder, one will observe at once the sero-sanguinolent serosity, the flesh very soft, flabby, and slate-coloured, and recognise the very peculiar odour.

One thing I notice is that the majority of carcases which are sent in come in whole, and have never been ribbed; now this should not be, for an opinion ought never to be passed on suspicious carcases unless they have been cut up (the beef is quite as easily consigned in butcher's cuts as whole), and I can safely say that if some of the carcases had been "ribbed" and examined, they would never have been sent in.

The fact that they should always be so treated cannot be too strongly impressed upon those who may have to deal with meat inspection, as it is not pleasant for a veterinary inspector at an abattoir to inspect such a carcase, and which, when cut into, is found to be as black as tar, of about the same consistency, and also is accompanied by a veterinary certificate that it is sound!

If this article should cause a little more caution to be used, it will well repay the writer.

Editorial.

PROTECTION *v.* FREE TRADE.

AT last Government is going to bestir itself and provide funds for the assistance of veterinary education—in Ireland. Mr. Balfour made the announcement in Parliament, on the 12th of last month, that the Government intended to lay aside £15,000 for the establishment of a veterinary college in Dublin. We must confess this rather took our breath away, and caused us no little amazement. Being only human—though editorial and therefore semi-omniscient—we could not help feeling a twinge of disappointment and vexation. We had heard so constantly of the many injustices done by our wicked Governments to Ireland that we had come to regard that distressful country with a mixture of generosity and pity. But now this is all changed and we feel that our Irish friends have rather got the better of us. They are probably chuckling over their victory, and compassionating us. Truly he laughs best who laughs last. But, seriously, we consider that England and Scotland—and especially ourselves—have been very shabbily treated. It seems scarcely consistent with even our English *economic* principles to introduce this form of protection. Had a wise and generous scheme been propounded whereby veterinary education all over the country was to be taken under the care of the Government and paternally treated by a Board of Education; had it been proposed to affiliate our veterinary colleges to the University system of the country; had it been proposed to form an endowment scheme for Scotland and England as well as for Ireland, we should have been perfectly satisfied. But we protest against this favouritism and partiality; we do not see why Ireland should be treated with paternal fondness whilst we are driven out of doors and left to feed and clothe ourselves as best we can. We go farther; we take the mere trader's point of view and say that such interference with existing private institutions, such a violent introduction of protectionist principles, is wrong both from the ethical and the economic point of view. The present colleges, owing their foundation to private initiative, have struggled manfully on through good report and bad report, through storm and sunshine; they have been the sole means of educating thousands of veterinary surgeons, who have gone to spread the light of science over the whole extent of the British dominions, and to found colleges in all our colonies. All

students, without distinction of creed or nationality or colour, have been made welcome, and have drunk at our fountains freely, and now, when we might have expected recognition in some form from a grateful country, we meet with this rebuff!

The question will doubtless be asked by many a harassed British tax-payer, Is this move on the part of the Government justified by reasonable expectations of economic success in the near—or even distant—future, or is it a mere concession to Irish clamour? The number of Irish students is not great, not nearly so great as of the English, Welsh and Scottish students, nor is the quality of the raw material, so to speak, so good. Why, then, a veterinary college should be established with Government funds in Ireland, with its diminishing population, we are unable to understand. A national veterinary college in the larger island, with its teeming population, its immense herds, its valuable studs, would have been intelligible and praiseworthy; in Ireland it seems slightly ludicrous. If the argument be used that the poorer country ought to be helped, we reply, let the Government establish a system of universities or scholarships whereby men of ability and character who have been hardly treated by fortune may be enabled to mature their powers and find a suitable field for the display of their abilities by attending the courses of one or other of our existing institutions. We trust the Government may not find its scheme abortive or ludicrously expensive. One hears every now and then of schemes established by well-meaning but rather dull-witted people, for the conversion of the Jews; the accounts are rather painful reading, for on the credit side we find, as the result of a year's trading, six extremely doubtful and, for the most part, totally worthless Jews, and on the debit side £12,000—just £2,000 per Jew! Heaven grant better results to the scheme of our legislators! And Heaven grant them the wisdom to see that all educational schemes to be successful must be impartial.

THE CLOSED DOOR.

Inspection of Meat.

Mr. CHAPLIN, replying to Mr. Field, said that he had no statutory authority to carry out an arrangement to establish an authorised body to conduct examinations and issue certificates to candidates applying for appointments as meat inspectors. Before proposing any legislation on the subject, it seemed to him desirable to wait for the result of the communication which the Local Government Board had addressed to the local authorities. In addition to this, the Sanitary Institute and other bodies had, he understood, for some

years past afforded opportunities for training and examination in meat inspection in connection with the certificates for sanitary inspectors, and he had no doubt that the recently-constituted Sanitary Inspectors' Board would maintain similar examinations. Moreover, he understood the Sanitary Institute were maturing a scheme for holding a special examination in meat inspection.

THE above is an extract from the Parliamentary proceedings of last month. I trust the Council of the Royal College is satisfied with it as the result of its own supineness and indifference. I had hoped that, to say the least, a more business-like spirit would have animated the members of that body, and that they would have been more keenly alive to the welfare of the profession. I must go on repeating what I have already said, that these inspectorships are the natural inheritance of the veterinary surgeon, and ought to have been reserved for him. It is not sufficient to stand in the public market-place with arms majestically folded, waiting for the public to come and beg us to accept office. The public is a good-natured, easy-going creature, if you like, and fond of fair play, but it is stupid, and it is above all things lazy, and likes to be wooed and flattered; it will not go out of its way to discover merit. It has been startled out of its repose by tales of disease and danger, and it wants to have its meat inspected. It has hitherto been accustomed to regard us as animal doctors, men who might be called in to examine and prescribe for its living horses and cattle, and sheep; how should it know that we are, from our studies and practical experience, the best judges of what is best and most wholesome, and what is dangerous? This is the best answer to those who maintain that our old degree is sufficient recommendation for us. I do not absolutely say it is not—except in certain cases; what I do say is that the public is not aware of our qualifications. Had the Royal College and the profession generally taken up my suggestion and provided, by means of short additional studies and a special degree, the guarantee demanded by the nation, we might have had a wonderful extension of the sphere of our activities, and a corresponding increase of our pecuniary resources. Failing this, what was Mr. Chaplin to do? He naturally thought us either incompetent for the work or indifferent to the rewards, and had to look about him for other people more anxious or better prepared, and he has applied to the Sanitary Institute. How this Institute is to furnish properly qualified inspectors I do not know; it is hatching a scheme at present which may see the light some day and may prove an abortion, but *may also prove a success.* I, of course, think that

only those men who have made a special study of the anatomy and physiology of the domestic animals are likely to become the best judges of what is suitable for human food in the flesh of these animals and what is dangerous; but it is quite possible that the public may be satisfied with a "colourable imitation" of the veterinary surgeon, and that this inferior article, by dint of its very inferiority and its obtuseness, may do us incalculable harm. Economists tell us that bad coin has a tendency to drive out good coin; the banks refuse to accept light sovereigns, the jeweller when he is going to melt them down weighs them to a fraction of a pennyweight and pays us accordingly; we therefore send all our coin of full weight to the bank or to our jeweller, and we pass on the light sovereigns to our neighbour. It may be the same with the veterinary profession. Inferior men, examined superficially—as must be the case, by the Sanitary Institute—which, of course, is not a veterinary school, the only proper training-ground for a meat inspector, as we think—will flood the market and gradually invade our territory. They will probably have the vulgar merit of cheapness, that curse of modern life, and will therefore appeal to the baser instincts of the populace; jealousy, vanity, and ambition may animate them and combine to render our position more and more precarious.

There are some superior persons in our profession who pooh-pooh our anxieties and despise, or affect to despise, these inspectorships. My answer to them is this: In the first place, all veterinary men are not so rich and haughty as you; have some regard for your poorer and humbler brethren, who are glad to add £50 or £100 to their income by taking an inspectorship; or, at least show, I beg you, some *esprit de corps;* in the second place, take an example from the trader, who often supplies a non-profitable article to his customer merely with a view to the exclusion of a rival who, when once he gets admission, may carry away a large slice of the profitable trade.

Finally, if anyone objects to me the fact that hundreds of veterinary men have applied for inspectorships, and maintains that this fact ought to convince Mr. Chaplin of our desire as a professional body to obtain these appointments, I answer that these isolated and individual applications are much more likely to cause distrust in the mind of Mr. Chaplin than any just confidence in our ability. He must be saying to himself continually, "What is the Royal College thinking about when it allows such a golden opportunity to escape?"

Parliamentary Intelligence.

HOUSE OF COMMONS,

Friday, May 19th.

The Foreign Meat Trade.

Mr. CHANNING asked the President of the Local Government Board whether he was aware that there was no proper inspection of the carcases of imported cattle, of which about 3,000 were weekly slaughtered at Deptford, and large numbers elsewhere; and whether, having regard to the large proportion of tuberculosis found to exist in cattle slaughtered and inspected for the detection of pleuro-pneumonia, he would arrange for an adequate staff to examine the carcases immediately after slaughter before removal of the offal?

Mr. CHAPLIN said he had made inquiries as regarded the foreign cattle market at Deptford, which was the only one specifically referred to in the question, and he was informed that in addition to the inspection of live animals by two veterinary inspectors appointed by the Board of Agriculture, there was a close inspection of the carcases. This matter was carried out by an inspector specially appointed by the Corporation of London, who devoted his whole time to the duty, under the supervision of a veterinary inspector of the Corporation and the superintendent of the market. He understood that cases of tuberculosis in this market were extremely rare, only two having occurred in the last 12 months.

Saturday, May 13th.

Inspection of Meat.

Mr. CHAPLIN, replying to Mr. Field, said that he had no statutory authority to carry out an arrangement to establish an authorised body to conduct examinations and issue certificates to candidates applying for appointments as meat inspectors. Before proposing any legislation on the subject, it seemed to him desirable to wait for the result of the communication which the Local Government Board had addressed to the local authorities. In addition to this, the Sanitary Institute and other bodies had, he understood, for some years past afforded opportunities for training and examination in

meat inspection in connection with the certificates for sanitary inspectors, and he had no doubt that the recently constituted Sanitary Inspectors' Board would maintain similar examinations. Moreover, he understood the Sanitary Institute were maturing a scheme for holding a special examination in meat inspection.

VETERINARY LEGISLATION IN NEW YORK.

MR. E. C. BRENNAN introduced in the New York Assembly on February 6th the following Bill (No. 650), which was read once and referred to the Committee on Public Health:

AN ACT

IN RELATION TO THE ESTABLISHMENT OF A STATE LIVE STOCK SANITARY COMMISSION, AND TO PROVIDE FOR THE CONTROL AND SUPPRESSION OF TUBERCULOSIS AND OTHER DANGEROUS DISEASES OF DOMESTIC ANIMALS.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:—

Section 1.—There shall be established as part of the State Government a commission to be known as the "State Live Stock Sanitary Commission," which commission shall consist of the Governor of the State ex-officio, and five other commissioners, to be appointed by the Governor by and with the advice and consent of the Senate, as follows: The Commissioner of Agriculture, a practical breeder of live stock, and the Secretary of the State Board of Health, and two competent and qualified veterinarians, who are graduates in good standing of some recognised and reputable veterinary college. Each commissioner shall be appointed for a term of four years and shall be subject to removal by the Governor for incompetency or neglect of duty.

Section 2.—It shall be the duty of the commission to protect the health of the domestic animals of the State; to determine and employ the most efficient and practical means for the suppression, control or eradication of any dangerous, contagious or infectious disease among the domestic animals, and especially of tuberculosis, and for these purposes it is hereby authorised and empowered to inspect or cause to be inspected by their duly authorised agent or agents, all milch cows, cattle or other

domestic animals, and the same to be re-inspected from time to time as may be deemed necessary, and to establish, maintain, enforce and regulate such quarantine and other measures relating to the movements and care of animals and their products, especially that of milch cows, to cause the disinfection of suspected localities, all premises, buildings, railroad cars, vessels and other objects from or by means of which infection or contagion may take place or be conveyed, and shall order or cause to be ordered the destruction of any or all animals as it may deem necessary.

Section 3.—Whenever it shall be adjudged necessary to the interest of the live stock industry of this State or to the welfare of the public to kill any animal or animals suffering from some contagious or infectious disease, especially tuberculosis, or any animal or animals likely to carry contagion, and an agreement cannot be made with the owner or owners thereof as to their value, two appraisers shall be appointed, one by the owner or owners of the animal or animals, one by the commission or a commissioner, and, in case of a disagreement, a third by the two, who shall under oath or affirmation appraise the animal or animals at their actual value at the time of the appraisement, and the owner shall be paid one-half of said appraisement; provided, that no such appraisement shall exceed 55 dollars for any single head of cattle unregistered animal, or 75 dollars for any single head of cattle registered, and 40 dollars for a single glandered horse or mule; and further, provided that no animal or animals found to be infected with any contagious or infectious disease within 90 days after having been brought from another state into the State of New York shall be paid for, but, notwithstanding, the commission shall be authorised to slaughter or cause to be slaughtered such animal or animals if in their judgment such a course is necessary to the interests of the live stock industry or to the welfare of the public; and provided, that in case it shall be found that the autopsy does not show or produce evidence of any contagious or infectious disease at the time of slaughtering, and were so slaughtered or destroyed by order of the commission, commissioner, or their duly authorised agent, the entire appraised value of the animal or animals shall be paid to the owner or owners.

Section 4.—The commission or commissioner, or their duly authorised agent, shall have the right to suppress the use or sale of any milk, product or products, of any animal or animals whatsoever, whenever they or he should deem it necessary for

the welfare of the public, by reason, or otherwise, of any contagious or infectious disease existing, or reasonably thought to be existing in any animal or animals that produce milk or any product sold for food, whether it be the product of, or the animal itself; when such suppression is so enforced, especially by reason of tuberculosis in milch cows, the commission, commissioner, or their agent, shall send notice to such local board of health in the locality that such supply is used, of such suppression, and shall cause a notification to be sent to such boards of health as soon as such suppression or quarantine has been removed.

Section 5.—The commission, or any commissioner, or any of their duly authorised agents, shall at any and all times have the right to enter any premises, farms, fields, pens, abattoirs, slaughter-houses, buildings, cars or vessels, where any domestic animal is at the time quartered, or wherever the carcase of one may be, for the purpose of examining it in any way that may be deemed necessary to determine whether they are or were the subjects of any contagious or infectious disease, and may call upon the sheriff or deputy sheriff, constable or peace officer of any county wherein such action is necessary to carry out and enforce the provisions of any notice, order or regulation which may be made for the purpose of carrying out the provisions of this Act, and all such sheriffs or deputy sheriffs, constables or peace officers shall obey and observe any and all such orders and instructions which they may receive from the commission or commissioner, or duly authorised agent, in the premises.

Section 6.—Any person violating, disobeying, or disregarding the terms of any notice, order, or regulation issued or prescribed by the commission, commissioner, or duly authorised agent under this Act, in destroying or defacing any mark or sign upon any animal that may be placed thereon by the commission, the commissioner, or their duly authorised agent, or caused by them to be placed thereon for the purpose of identification of such animal, shall forfeit to the people of the State the sum of one hundred dollars for every such violation, or, in default of such payment, may be convicted by the local police justice for a term not more than thirty days in the county jail for each and every violation.

Section 7.—The commission is hereby empowered to employ such assistants and agents, and to purchase such supplies and materials as may be necessary in carrying out the provisions of this Act, and to administer oaths or affirmations to the appraisers appointed under this Act.

Section 8.—The inspectors of the bureau of animal industry of the United States shall have the right of inspection, quarantine, and condemnation of animals affected with any contagious, infectious, or communicable disease, or suspected to be affected with such diseases, or that may have been exposed to any such diseases, and for such purpose they may enter upon any grounds or premises, they may call the sheriffs, constables, and peace officers to assist them in the discharge of their duties in carrying out the provisions of any such Act, and all sheriffs, constables, and peace officers shall assist such inspectors when so requested, and such inspectors shall have the same powers and protection as peace officers while employed in the discharge of their duties. The State shall not be liable for any damages or expenses caused or made by such inspectors.

Section 9.—The compensation of the commissioners shall be fixed each year by the governor.

Section 10.—All expenses incurred by the State Live Stock Sanitary Commission in carrying out the provisions of this Act, and in performing the duties hereby devolved upon it, shall, after approval in writing by the governor and president of the State Live Stock Sanitary Commission, be audited by the comptroller, and a sum not exceeding fifty thousand dollars, or as much thereof as may be necessary, is hereby appropriated out of any money in the Treasury not otherwise appropriated for carrying out the provisions of this Act.—*American Veterinary Review.*

Legal News.

SCOTLAND.—BILL CHAMBER.
(Before Lord Low.) *May 10th.*

S. and I.—W. Williams and Son v. W. D. Fairbairn.

COUNSEL were heard on May 10th, in an application presented by W. Williams & Son, of the New Veterinary College, Edinburgh, against William Douglas Fairbairn, veterinary surgeon, Edinburgh, in which interdict is asked against the respondent, W. D. Fairbairn, practising as a veterinary surgeon or farrier in the employment of Colin C. Baird & Son, at any time prior to 29th June, 1900, or from starting business in Edinburgh as a veterinary surgeon or farrier by himself or along with any other person prior to 29th June, 1900. The

complainers state that for several years prior to 29th June, 1895, the respondent carried on a business as a veterinary surgeon and farrier in Edinburgh, latterly at 129, Rose Street. He assigned that business to the complainers on 27th June, 1895, in consideration of the sum of £250, and he further bound himself "not to practise or start business in Edinburgh as a veterinary surgeon or farrier for at least the space of five years from and after the 29th June, 1895." Business is still carried on at 129, Rose Street, by the complainers. Recently the respondent is said to have commenced to practise as a veterinary surgeon in the employment of Messrs. Baird and Sons. The complainers aver that his remuneration consists in whole or in part of a share of the profits of the business in which he is engaged. This, the complainers maintain, is a breach of his obligation, and as he refuses to desist, the present action has been rendered necessary.

Mr. Wilson, who appeared for the respondent, submitted that the undertaking meant that Mr. Fairbairn was not to start as a principal, and that it did not mean to prevent him from taking any subsidiary employment. He was now acting as a salaried assistant, and the agreement was not intended to prevent him from taking such work. Obligations of this kind were always construed in favour of liberty, and Mr. Wilson submitted that interim interdict should not be granted *de plano* on what was at best an ambiguous undertaking not to practise or start business.

Mr. Moffat, of Messrs. Gordon, Petrie & Shand, S.S.C., for the complainers, said that this man was going round canvassing his old customers—coachmen—and getting orders. That should be stopped, and he asked for interim interdict.

Lord Low said he would not like to give any opinion upon the true meaning of that contract without consideration. But the only question before him was whether interim interdict should be granted before answers were put in. He reserved as to interim interdict until answers were lodged, and ordered that they should be put in in four days.

May 10th.

The further hearing took place before Lord Pearson. The complainers stated that for several years prior to 29th June, 1895, the respondent carried on a business as a veterinary surgeon and farrier in Edinburgh, which business he has assigned to the complainers in consideration of £250, and he further bound himself "not to practise or start business in

Edinburgh as a veterinary surgeon or farrier for the space of five years from 29th June, 1895." The respondent was said to have commenced to practise with Baird & Son, and this, the complainers allege, is a breach of the agreement. When the case was before Lord Low in the Bill Chamber during the vacation, his lordship reserved the question of interim interdict until answers were lodged. In these answers the respondent denied that his remuneration consists in whole or in part of a share of the profits of the business in which he was engaged. It was also denied that the respondent was canvassing his old customers and getting orders. He was now acting as a salaried assistant, and the agreement was not intended to prevent him from taking such work.

Lord Pearson passed the note and refused interim interdict. There were questions of construction, he said, which would require to be considered and decided in the ultimate stage of the case, but on the question of interim interdict he was certainly not prepared to hold that the *primâ facie* meaning of the contract was what the complainer said, so clearly as to warrant his lordship in granting interim interdict, because at that stage he must take it that the complainers' averment was that practising as a veterinary surgeon was a contravention of the agreement even if it were not practising as principal at all, but practising in the employment of another firm.

Counsel for the complainer, Mr. Chree; agents, Gordon Petrie & Shand, S.S.C.

Counsel for the respondent, Mr. Wilson; agent, Hugh Martin, S.S.C.

Reviews.

We have received a reprint from *The Builder's Journal and Architectural Record* of November and December, 1898, containing most interesting extracts from a paper on "Ventilation" read by Dr. John W. Hayward some time ago, and we advise our readers to study the remarks on "Natural Ventilation" contained therein.

We have received the second number of *The Veterinary Student*. It is hardly the thing for a student's journal to discuss as to how a student should or should not be educated.

If his seniors, from their long experience, are of opinion that a certain way is the best way, it is unwise of him to kick against the prick. We congratulate the editor on the appearance of the second number, which contains much readable material.

WE have received a very perfect case of tubes of veterinary hypodermic tabloids from Messrs. Burroughs, Wellcome & Co., London, among them being Caffeine, Sodio-Salicyl., Morphine, Colchicine, Sulphate of Strychnine, Morphine and Atropine, Sodium Arsenite, Ergotinine Citrate, Digitatin, Hyoscyamine, Apomorphia, Aconitine, Coniine, Cocaine, etc., etc.

All of these tabloids are carefully made up in appropriate doses for our patients. They are made up in dozens and packed in glass tubes. The great advantage is that these tabloids are easily carried and easily dissolved for injections. In fact one may now quite easily carry every necessary medicine in one's waistcoat pocket.

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

THE CARLISLE CASE.

Sir,—Will you kindly allow me space in the pages of your journal to make a few remarks anent the above case. I note in your last month's issue you refer to the matter and simply named your article the "Carlisle Case," the word *cruelty* ought to be deleted from all correspondence, as there was none committed—the case was quashed.

I have been associated with the matter from its commencement, and the reason why I have personally interested myself so much is because Mr. Hewson was for some time an assistant of mine, and I am well acquainted with his abilities, more particularly as an obstetrician; standing six feet, he has height, reach and command over his cases, and while he was under my roof I never feared the ring of the night-bell. If he fails to deliver a mare, cow, ewe, or pig, I think none other need try; and from what I know of the case, it was solely in the interests of humanity he ordered the cow to be destroyed. I for one, Mr. Editor, thank you most sincerely for the able and sensible reasonings in your article in last month's journal, page 327, another proof of your old proverb "a man foals a mare, or calves a cow, with his head."

I consider that Mr. Hewson and Mr. Hurst, both duly qualified members of the profession, and tested by men selected and appointed by the Council of the R.C.V.S. as examiners, were better able to judge the condition of the cow under their own observation than any other member of the profession who never saw the case, and who had third-hand evidence only to go upon, and that evidence from one who was deeply interested on the side for the prosecution.

If Mr. Elphick, as a member of the Council Board—with an eye on the presidential chair—had the interest of the profession, as well as its members, at heart, one would think from his position he would have written Mr. Hewson for full particulars, and not have been so hasty in giving his opinion on third-hand evidence from a prosecuting inspector.

The Council Board—of which, as already said, Mr. Elphick is a member—is responsible for Messrs. Hewson and Hurst being qualified veterinary surgeons, and it leads one to think Mr. Elphick doubted their competency to practice; and this would be casting a reflection on the abilities of the examiners, and also on the Council for appointing them. It is bad enough when half-a-dozen professional men on one side and six on the other differ as to where a horse is lame, with the case before them, but when professional men act as experts, and give evidence on a case they never saw, against a brother professional who had the case in hand and knew all its history, it is deplorable.

This prosecution ought never to have been, and, had it not been for Mr. Elphick, the case would have been dismissed at the first hearing; or if he, as a Council man, had consulted Mr. Hewson anent the case, it would never have gone for trial at all. When he was recalled, and a question put from the bench, his reply was, "that immediately a cow commenced to pain she would pain on incessantly until she died from pure exhaustion, or got rid of the fœtus;" and I see, from a letter he has in the *Record*, he is trying to exonerate himself, but, if he takes my advice, he will let that matter rest—there were too many people in court who heard him, in addition to the reporters. His letter is made up of hearsays and third-hand evidence, and is worth comparing with Mr. Hewson's explanation of the case at the special meeting of the Border Counties Veterinary Medical Society. (See *Veterinary Record*, April 8th.)

HENRY THOMPSON, M.R.C.V.S.

Aspatria.

HEWSON'S APPEAL FUND.

To the Editor of THE VETERINARY JOURNAL.

SIR,—May we ask if you would kindly insert in the next issue of THE VETERINARY JOURNAL the following full list of subscribers to the above fund, with the amount of donations up to the time of writing. Also to thank those gentlemen who have so handsomely responded to the call. The subscriptions have not come in so quickly as the committee could wish, but this may possibly be accounted for by the fact the only publicity has been through the columns of the weekly *Veterinary Record*, wherein the case has been fairly well put before the members of the profession, by editorials, articles, and letters.

We here take the opportunity of strongly urging members that have not joined the National Veterinary Benevolent and Mutual Defence Association to do so at once, by sending their names to Sam Locke, Esq., M.R.C.V.S., Grosvenor Street, Manchester, as they do not know the moment they may be pounced upon, and subjected to a costly litigation, even when performing an ordinary necessary operation.

The Carlisle case is very illustrative, and also goes to show that the cash to meet the expenses is not so readily raised. If Mr. Hewson had been a member of the N.V.B. and M.D.A. he would not only have had all the anxiety as to the monetary part taken off his shoulders, but would have been ably supported by the council of the association, who have, as will be seen on referring to the list of subscriptions, sent a donation of £10 10s. Therefore we say hurry up and become members.

The committee beg to tender their sincere thanks, on behalf of Mr. Hewson, to those gentlemen, viz., Professors Williams, McCall, Dewar, and Messrs. Clark, Olver, Cunningham, and Rutherford, for so generously attending the court without fee, and giving evidence on behalf Mr. Hewson. Had they not done so the costs would have been very considerable.—We are, Sir,

JAMES LINDSEY, Dumfries, *Chairman.*
JOHN ARMSTRONG, Penrith.
W. C. CRAUDACE, Haltwhistle.
HENRY THOMPSON, *Secretary and Treasurer.*

(*Members of Committee.*)

Aspatria.

List of Subscribers.

	£	s.	d.
Mr. C. Cunningham, Slateford	1	0	0
„ Jacob Howe, Keswick	1	0	0
„ Hy. Thompson, Aspatria	1	0	0
„ Jas. Lindsay, Dumfries	1	0	0
„ S. Martin, Appleby	1	0	0
„ Jno. Armstrong, Penrith	1	0	0
„ Jos. Pears „	0	10	0
„ W. C. Craudace, Haltwhistle	0	10	0
„ Wm. McKie, Carlisle	0	10	0
„ F. Fletcher, Hillsboro'	0	10	6
„ Alex. Pottie, Paisley	0	10	0
Messrs. A. Green & Son, Dudley	0	10	6
Mr. C. Stevenson, Newcastle-on-Tyne	1	1	0
„ P. M. Walker, Halifax	0	10	0

List of Subscribers—continued.

Mr. R. C. Trigger, Newcastle-under-Lyme	£1	1	0
„ R. C. Robinson, Longtown	0	10	6
„ F. W. Garnett, Windermere	1	0	0
„ G. E. Nash, Richmond	0	10	6
„ F. Armstrong, Penrith	0	10	0
„ Jas. F. Simpson, Maidenhead	1	1	0
„ P. Manuel, Crewe	0	10	6
„ John Soulsby, Cockermouth	0	10	6
„ J. H. Carter, Burnley	0	10	6
„ Professor Dewar, (Dicks) Edinboro'	1	1	0
„ Alf Marston, Kinnersley, Herefordshire	0	10	0
„ David Imrie Glasgow	0	10	0
„ Jno. Troughear, High Heskett	0	10	0
„ T. Hopkin, Manchester	1	1	0
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„ Jos. Lyons, Aspatria	0	10	0
„ A. Chivas, Corbridge-on-Tyne	0	10	0
„ R. W. Glaister, Millom	0	10	0
„ H. Sessions, Brighton	0	10	6
Yorkshire Veterinary Medical Society	2	2	0
Mr. W. C. Barling, Newnham	0	10	0
Messrs. Greaves, Faulkner & Jones, Manchester	1	1	0
Mr. Jos. Carlisle, Carlisle	1	1	0
„ A. Renfrew, Worcester	0	10	6
„ Alex. Lawson, Manchester	1	1	0
National Benevolent Veterinary Medical Society	10	10	0
Mr. J. W. Edwards, Kingston-on-Thames	1	1	0
„ Thos. Barker, Albany Street, London	1	1	0
„ W. A. Taylor, Manchester	1	1	0
„ Jno. Caldwell, Brampton	0	10	0
„ Wm. Hodgson, Brigham	0	10	0
„ F. G. Edwards, Chester	0	10	6
„ R. C. Edwards „	0	10	6
„ J. M. Watson, Ireby	0	10	0
	£47	5	6

Honorary Secretaries of veterinary medical societies and associations are informed that if they will forward the MSS. of their proceedings before the 18th of the month, the Editor will have much pleasure in returning them proofs within a few days thereafter, so as to enable them to be correctly inserted in the VETERINARY JOURNAL.

FIGHT BETWEEN AN INNKEEPER AND A "VET."—At Kirkcudbright, on the 5th May, John MacLachlan, innkeeper, and Thomas Campbell, veterinary surgeon, Kirkcudbright, pleaded guilty to fighting and breach of the peace on Gatehouse Road. MacLachlan, who also admitted assaulting a groom, was fined £10, or 60 days' imprisonment, and Campbell £5, or 30 days. Sheriff Leyll said their conduct was disgraceful.—*Evening News.*

Extracts from Foreign Journals.

SYNGAMI OF THE LARYNX IN ANNAMITE OXEN.

MM. Carré and Fraimbault, military veterinary surgeons attached to the Pasteur Institute at Nha-Trang (Annam), have requested me to present to the society a great curiosity, consisting of a calf's epiglottis, on the posterior face of which may be determined, towards the base, the presence of numerous round worms coupled together and fixed to the mucous membrane by the mouth. Through their having been preserved in alcohol, these worms have become whitish, but their normal colour is blood-red. They are in a state of permanent copulation. The male measures, on an average, three millimètres in length, the female nine millimètres. The vulva being situated towards the anterior quarter of the body, the male, which envelops it by means of its caudal purse, curves its body forwards, in order to fasten itself by means of the buccal capsule at a short distance from the female. At first sight it is easy to recognise that these parasites are syngami. Zoological study shows it clearly, besides; we have here to deal with a new kind, to which I have given the name of *Syngamus Laryngeus*. Perhaps it is not out of the way to remark that this species has nothing in common with a so-called microscopic syngamus described in 1896 by Willach of Karlsrhue, who reported that he had extracted it from hæmorrhagic foci located in the adipose tissue piled up round the lymphatic ganglia, in an ox slaughtered for cerebral tuberculosis. It seems quite evident that the *Syngamus bovis*, Willach, had never any existence except in this observer's imagination.

Syngami of the larynx are very common in the cattle of South Annam. The studies of rinderpest carried on by MM. Carré and Fraimbault have led our colleagues to perform during the past year a hundred autopsies; now, they have determined the presence of these worms in more than fifty subjects. The parasites do not merely fasten upon the epiglottis; they are often met with also in the lateral ventricles of the larynx, and even on the vocal cords. Only once has a pair been found in the upper portion of the trachea. When they exist only in small numbers, they easily pass unperceived, for they are very apt to be taken for threads of coagulated blood. On the other hand, their presence is easily determined when they are joined together to the number of fifteen to twenty couples. But a curious fact to be noted is that

these worms do not seem to cause inconvenience to the animal they live on, despite the high sensibility of the larynx. In the laboratory of Nha-Trang, the animals are always kept under observation some time before being experimented on; they have never seemed to experience the least discomfort. And even on autopsy no particularly marked lesion has been reported; the larynx has preserved its normal white-pink hue, without a trace of inflammation.—M. M. A. RAILLET. (*From the proceedings of the Société de Biologie.*)

Proceedings of the Veterinary Medical Societies, etc.

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE spring meeting was held on Friday, April 28th, at the Queen's Hotel, Leeds. The chair was occupied by the president, Mr. T. Fletcher, of Sheffield, and those present included Messrs. G. E. Bowman, J. S. Carter, Bradford; J. Clarkson, Garforth; J. Cooke, Scarboro'; F. W. S. Clough, Morley; A. Gentle, Otley; W. F. Greenhalgh; Hollings, Methley; J. W. Lazenby, Boston Spa; A. W. Mason; J. McLean, Dewsbury; R. Peech, Rotherham; J. E. Scriven, Tadcaster (hon. treasurer); H. Snarry, F. Somers, York; C. S. Smith, Barnsley; W. T. Schofield, Pontefract; A. T. Waller, Skipton-in-Craven; G. Whitehead, Batley; A. McCarmick (hon. secretary), and a visitor.

The SECRETARY reported that there was a balance of over £12 in hand in connection with the fund raised for the entertainment of the National Conference of Veterinary Surgeons, which was held in Leeds in 1898, and it was resolved to appropriate the amount to the general funds of the association.

The Carlisle Cruelty Case.

The PRESIDENT then drew attention to the case in which Mr. J. W. Hewson of Carlisle, was prosecuted by the R.S.P.C.A. for cruelty. He had, he said, asked the secretary to place the matter on the agenda, because he considered it a most important matter, which raised the question as to whether they should, as a profession, be trampled down by the R.S.P.C.A. The society was very rich, and consequently very powerful, and they knew not how soon any of them might come under its ban for using a twitch, or what they might think too strong a caustic, and perhaps even for firing a leg without the use of an anæsthetic. No class of men were more careful not to cause unnecessary pain to a dumb animal than the veterinary surgeons of the present day, but there were times when they must cause pain to protect themselves and to cure the animal from disease from which it was suffering. Were they, then, to allow the officers of this society—men collected from all grades of trades and businesses, except those having any knowledge of physiology and pathology—to step in and tell them they were guilty of committing acts of unnecessary cruelty? He said they must not—they must show, not only by their words, but by their acts, that this should not be, and he appealed to all veterinary surgeons who were true to their profession to band themselves together and go to the help (pecuniary and otherwise) of a brother professional who was placed in a similar position to that of Mr. Hewson, of Carlisle. There united thanks were due to those gentlemen who appeared for Mr. Hewson on his appeal

trial, and although their thanks were due to each one alike, he could not help mentioning their old friend, Professor Williams, who once more stood in the breach, as he had done many a time, to protect the reputation, as well as the purse, of a brother professional. He (the president) wrote a letter to Mr. Hewson the same night as that upon which he received *The Veterinary Record* containing the report of the first trial, and that would suffice to show his feeling—his strong feeling—at that time; but when he received the report of the appeal, his astonishment was greater than at the first report when he saw the name of Mr. Hunting on the side of the prosecution. He had always thought Mr. Hunting a great stickler for the rights and liberties of the profession, and that instead of trying to ruin a brother professional in a very doubtful case, he would sooner have gone to his assistance and helped him out of his difficulty. He could only think that Mr. Hunting took the part he did without giving the slightest thought to the matter, and, to use his own words as against the R.S.P.C.A., "made one great mistake and appeared on the wrong side." As for the other gentleman all the way from London, he—and he thought he might say they—were not surprised at his action in the matter. He believed it was this gentleman's business or trade to travel about for the R.S.P.C.A.—and they all had to live by some means or other—and as expert evidence had so many sides to it, it was easy to blow the wheel one way one day, and the other way the day following, and so keep the business going. He would read them his letter to Mr. Hewson on the appearance of the first report, and then ask them to express their opinion of the conduct of those gentlemen against Mr. Hewson. The letter was as follows:—

April 8th, 1899.—Cruelty Case at Carlisle.—I have just read in *The Veterinary Record* the report of this case before the magistrates, and also the report of the special meeting of the members of the Border Counties Veterinary Society, and I scarcely know how to commence this letter to express sufficiently my surprise at the proceedings and their termination; but I do hope yourself and the Border Counties Society, with the rest of the profession, will not allow what has already happened to be the termination of the case, and I, as one of the "rest," enclose 10s. 6d. towards the expense of an appeal. I am quite aware of the differences of opinion that may be formed from the report of a case and the direct hearing of the evidence in the same case, so that certain allowances may be made, but in the present case the facts are so simple that it resolves itself into a professional opinion of cruelty or no cruelty. After over 40 years' experience in an extensive cattle practice, I say most decidedly that there was no cruelty, if the report is correct. Every cowman and veterinary surgeon who has a cattle practice well knows what very great difficulties in parturition a cow will go through with comparatively little suffering or after trouble. I have known cows commence to calve in the field, and to be found grazing about with the head and one leg of the fœtus protruding from the vagina, dried up by the heat of the sun, and then driven half a mile or more before delivery and take no harm. As to cows with dead calves in them, they will travel several miles without showing pain or fatigue. How three M.R.C.V.S. could be found to help to strangle a brother professional over such (I say nothing more) a doubtful case of cruelty I do not know. If Mr. Elphick's statement as reported by Mr. Hewson is correct, that immediately a cow commences to pain, she would pain on incessantly until she killed herself of pure exhaustion or got rid of the fœtus, it shows that Mr. Elphick knows very little about the subject. He was perhaps thinking of the mare and not the cow, for how frequently is it necessary when you have got the calf in a position for delivery to have to give the cow some uterine stimulant for her to help delivery? Mr. Brown and Mr. Tennant, like good little boys under the R.S.P.C.A., pulled at Mr. Elphick's rope to finish their brother M.R.C.V.S. How delighted they must feel at the result. But out of evil comes good, and I hope it will in this case.—Yours faithfully,

T. FLETCHER, M.R.C.V.S.

In reply to that letter (continued the President), he received an intimation that the conviction had been appealed against, and quashed.

Mr. A. W. MASON (Leeds) expressed the opinion that the evidence for the prosecution in the Carlisle case was the most deplorable exhibition that had

ever taken place. It was clear that the expert evidence was given by experts who did not treat the bovine species. The time had come, in his opinion, when such societies as theirs should discuss such matters as these fully and freely, and determine on some way in which they could protect themselves individually from these attacks, which seemed to come from behind their backs. A more deplorable exhibition than the expert evidence in this case he never saw, and he thought they should, as a society, protest against it in a practical way. He moved that as a protest against this case, the Yorkshire Veterinary Medical Society should forward a subscription towards the costs of Mr. Hewson's appeal. He suggested £2 2s., but it was not the amount of money, but the protest that he cared for.

Mr. J. S. CARTER (Bradford), after expressing concurrence with the experiences of the president with regard to cattle practice, said in his opinion Mr. Hewson was very badly treated.

Mr. J. E. SCRIVEN (Tadcaster) said there was no cruelty in the case at all. These men came down from London, and knew nothing about cattle at all, yet they gave evidence of the kind they had for the R.S.P.C.A. Professor Pritchard and Mr. Wm. Hunting were on the list of Honorary Associates of the Yorkshire Society. He moved that their names be struck off.

Mr. J. CLARKSON (Garforth) said the rules of the society provided that before that course was taken the members involved were to be written to and asked for an explanation. Professor Pritchard had been connected with these prosecutions before.

Mr. G. E. BOWMAN (Leeds) pointed out that this was the first case in which Mr. Hunting had been concerned, and deprecated the extreme step being taken of removing his name from the society.

Mr. W. F. GREENHALGH (Leeds) moved that the secretary should write to Professor Pritchard and Mr. Wm. Hunting and ask for their explanation of the circumstances.

Mr. F. W. SOMERS (Leeds) seconded, and the motion was agreed to unanimously.

The resolution to subscribe £2 2s. to the Hewson appeal costs was also agreed to unanimously.

Leeds Corporation and Inspection of Cows and Cowsheds.

Mr. W. F. GREENHALGH (Leeds) referred to the proposals in the Leeds Corporation Bill in Parliament with reference to the inspection of cows. As at first proposed, a scavenger could have gone into a mistal and inoculated—or tried to inoculate—with the tuberculin test, and pass an opinion on it. That had now been completely changed. The Bill was so modified that a veterinary surgeon was to accompany the medical officer of health in all inoculations. So that the point claimed by the veterinary profession had been gained. Referring to the difficulties in the way of inspection for tuberculosis, Mr. Greenhalgh said that he and Mr. Bowman had lately made two *post-mortem* examinations. One was an animal that had won two prizes at the Leeds show, one for milk and the other for weight. She was inoculated and showed a rise of temperature and reacted. She was killed and there was nothing in the lungs or liver or any of the organs to show tuberculosis. It was only on minutest examination that they found traces in gland of the throat. How was it possible for anyone but a veterinary surgeon to deal with such cases?

Mr. BOWMAN reported another case in which he examined the udder minutely before slaughter and found not the slightest trace of disease. But when the cow was killed and he made a *post-mortem* examination, he found any amount of tubercle in the udder. It could not, however, be felt externally.

A vote of thanks having been passed to the committee which met the Leeds Corporation on this matter, Mr. A. W. MASON, who was the chairman of the committee, said they might congratulate themselves upon the position at present. They had asked the Leeds Corporation that they should be the instruments to point out to the medical officer of health diseased animals, and that they should be the proper persons—as indeed they were the proper persons—to make use of the tuberculin test. These provisions were in the present Bill, so they might congratulate themselves up to a certain point.

Mr. C. SECKER SMITH (Barnsley) described an interesting case, which was discussed at length, and this concluded the business of the meeting.

The PRESIDENT announced that at the next meeting Professor Macqueen would be present and read a paper.

IRISH CENTRAL VETERINARY ASSOCIATION.

A MEETING of the members was held on Wednesday evening, April 26th, at 6 o'clock, in the Grand Central Hotel, Belfast. J. Freeman, Esq., F.R.C.V.S., Dublin (president), occupied the chair. The following members were present: Messrs. M. Hedley, Chief Inspector Veterinary Department, Dublin Castle; McKay, Belfast; Dawson, Cavan; Thompson, Purdy, Belfast; Thompson, Lurgan; and A. Watson, Dublin (acting as secretary *pro tem.*).

Mr. HEDLEY objected to the minutes being signed owing to their ambiguity, but finally consented upon a note being made of his protest.

Nominations.

The following were proposed as members of the Association by Mr. FREEMAN and seconded by Mr. HEDLEY:—Mr. Thompson, M.R.C.V.S., Lurgan; and Mr. Ewing Johnstone, M.R.C.V.S., Belfast.

Mr. HEDLEY proposed that the rules of the Association be submitted to the Executive Committee for consideration and report for next general meeting.

Letters of apology were read by the president from Messrs. Cargill Patrick, Ballinasloe; Martin, Enniskillen; J. J. Ross, J. E. Johnstone, Belfast; P. J. Howard, Ennis.

Mr. HEDLEY gave a report that over 55 new members were added to the membership of the National Veterinary Association.

Mr. THOMPSON (Lurgan) apologised for the sparse meeting, as he quite forgot it was so long since the secretary had written to him.

PRESIDENTIAL ADDRESS.

BY J. FREEMAN, F.R.C.V.S., DUBLIN.

Gentlemen,—In taking my position this evening as president of the Central Veterinary Medical Association of Ireland, my first words to you must be an expression of thanks for the great honour conferred on me, which I recognise and appreciate to the fullest extent. When I look back on the manner in which our late president initiated this society, and the success it has attained under his generalship, I feel acutely my inability to do justice to the occasion, although I shall earnestly strive to justify the confidence which you have reposed in me, that, when I come to relinquish the chair, even if I have not quite attained that high standard of excellence which my predecessor has set up, I shall at least be conscious of having done my duty. I have taken the keenest interest in this society since it was started, and my sole aim will be to enhance its usefulness, and, with a good attendance of members at our

meetings, backed up by a free interchange of views, much benefit will accrue from our deliberations and discussions. As time is limited, my remarks will be few, and confined to some of the events of interest to the veterinarian during the year.

Tuberculosis and its eradication is at the present time occupying the minds of many, and as experiments proceed, and the high percentage of reaction to the tuberculin test of animals in apparently the pink of condition and health, selected with the greatest possible care and kept under the most rigid hygienic surroundings, if, in herds of cattle under such conditions, 25 to 30 per cent. react to the test, the difficulty, not to say the impossibility, of eradicating tuberculosis from among the domesticated cattle of the country becomes more and more apparent. Many suggestions have been made, but I am afraid the day is far distant when the problem of dealing practically with tuberculosis is solved.

With the aid of tuberculin the diagnosis of the disease, once so difficult, is rendered easy, and if all clinically-affected animals are destroyed, and all animals without any abnormal defect in the udder tested, and any reacting compensated for and destroyed, I think the public might, so far as milk is concerned, be assured that the risk run by its consumption will be infinitesimal.

As regards the infallibility of tuberculin as a test for tuberculosis, Professor McFadyean, in the March number of *The Journal of Comparative Pathology and Therapeutics*, draws attention to a possible source of error, and that is, in the character of the rise of temperature he notes a gradual rise as being characteristic of the disease; a sudden rise is always to be regarded as suspicious.

A recent discussion with regard to acquired immunity, said by some to be produced by the constant injection of tuberculin, is worthy of notice.

You will have observed that there has been a discussion in the Council with regard to a new degree in Public Health, brought forward by Professor W. O. Williams, and opposed by others on the ground that the present veterinary degree renders any additional training unnecessary.

Lieutenant Rose has introduced a new method of dealing with canker of the foot, and if his method is as successful as he claims for it, I have no doubt it will be hailed with delight by many practitioners who have been sorely disappointed with the former treatment.

To Professor Hobday the best thanks of the profession are due for his admirable clinical articles on canine and feline surgery, which are unique in their way, and afford the busy practitioner an admirable experience in many difficult cases.

The Carlisle cruelty case will furnish food for much reflection, and the conflicting expert evidence does not tend to elevate the veterinary profession in the eyes of the general public. The gigantic rush of the Border veterinarians to join the Mutual Defence Society was not without humour to the onlooker, but proves that an individual feels the necessity of the support of such a society in a case of the sort.

The new dog disease, or the Stuttgart dog epizootic, so far as I am aware of, has not been seen in Belfast, but as it has been prevalent in many parts of England, and with recent dog shows held in various parts of the East of Ireland, where many of the dogs exhibited were English, no doubt sooner or later it will appear, and any one who has read *The Veterinary Record* and *The Journal of Comparative Pathology and Therapeutics* will have little difficulty in diagnosing the foreign invader.

At a meeting of the Irish Central Veterinary Medical Association held in Dublin last January, a committee was deputed to wait on the Irish National Veterinary Association and make such arrangements as might seem necessary

for the purpose of inducing the National Veterinary Association to come to Ireland in 1900. The result, I am pleased to say, has not been fruitless, and we have every reason to hope that they will be induced to visit us, and be accorded a truly Irish welcome.

In conclusion, I feel it my duty, and it gives me extreme pleasure, to draw the attention of the profession to the admirable arrangements made on behalf of the Local Authority Veterinary Inspectors under the new Local Government Bill, which carries them over as existing officers to the new County and Borough Councils, leaving the adjustment of salaries to an official of the Local Government Board provided for the purpose, when the Local Authority boundaries run into more than one county. It will thus be seen that if a Poor Law Union at one time ran into, say, three counties, instead of the Local Authority veterinary inspector being dispensed with, and his three sections given to others, he will continue to exist, but his salary will be paid without deduction by each of the three counties proportionately, the proportion being decided as I have already pointed out—at least, this interpretation is the one I am led to believe is correct. Any modification will be infinitesimal.

A vote of thanks was accorded to the president (Mr. Freeman, Dublin) for his able address, proposed by Mr. HEDLEY and seconded by Mr. THOMPSON (Lurgan), and carried unanimously.

SOME DISEASES OF THE TENDONS AND THEIR SHEATHS.

BY A. WATSON, M.R.C.V.S., DUBLIN.

Gentlemen,—I am afraid I cannot offer you any startling revelations in the field of pathological research, for the subject which I have chosen has been subjected to the criticisms of so many prominent veterinarians that indeed I am rather surprised at my own audacity, and yet I think the lesion vulgarly spoken of as "sprain of the back sinews" is of so much importance in our practice, and the result of the various forms of treatment has been so unsatisfactory to our patients, our *clientièle*, and ourselves, that it seems to me to well deserve careful discussion at our hands.

A doctrine advocated by Professor Williams has always caused me to pause and consider, and it is with no little fear that I can bring myself to question its truth, considering the personality of its expounder; I quote the sentence, which reads as follows: "The so-called sprain of the back sinews is not primarily in reality (mark the words "is not primarily in reality") a lesion of the flexors tendons proper, nor of their thecal, but consists of a diseased condition (mark again "a diseased condition") arising from over-extension of the metacarpal or metatarsal check ligaments. I could never see why there must be any "diseased condition," or "over-extension of the check ligament," and I fancy that if the word auxiliary were used instead of check, it might more truly describe the functions of the ligament.

I will leave this for a few moments till I describe some peculiarities of conformation and structure of the tendons which leaves it open for them to be the seat of the primary lesion without any fault attributable or contributable to the so-called check ligament.

That there are horses with large but soft tendons, large muscular heavy bodies, must be known to us all, and in my experience it is this class of horse which is most likely to be the subject to tendinitis. I would ask you to observe the horse with the nine inches below the knee (to use the phrase of the sire advertiser) and let him come to do any hard work or severe training and see how long he will last without requiring rest, liniments, the vesicant, or the firing-iron. Now, whilst I must not be taken as condemning all horses as

being of the soft order which have nine inches below the knee, yet in a great number of cases the absolute thickness is not at all in the direct proportion to the strength or resisting power of the parts; not infrequently the conviction has been borne in on me that the large legged and the heavy muscular horse is wanting in the grit which characterises his smaller brother, and if the horse with the hard, sharply defined tendons gets a strain, the recovery is much quicker and more thorough.

There is a peculiar conformation which consists in being "tied in below the knee" and a long slender pastern which very commonly induces tendinitis upon the animal being called upon to perform even a slightly increased amount of work more than ordinary. Low heeled and long toed horses (if I might be allowed to coin a phrase) are also subjects to easy attack. In some instances which came under my observation, decided changes in the back sinews manifested themselves during the convalescent stage of influenza, converting the hard decided tendons into soft, swollen, flabby structures, which, upon the animal being galloped, went irretrievably wrong. In spite of all remedial treatment they had to be trained for harness.

Some veterinarians assert that spirited horses are more liable to tendinitis than the phlegmatic. I would certainly give a direct contradiction to this assertion, and I would ask the opinion of gentlemen here as to the accuracy of the statement. There is considerable difficulty in describing to another the sensation felt upon handling certain parts, and yet the niceties of distinction so conveyed are as actual as the varied differences of pathological structure to the accurate observer. Some time ago I was the owner of a thoroughbred mare which would be described as having bad forelegs, in fact she was what might be truly described as leggy, and yet, upon handling the tendons and bone, she felt so hard, firm, and flinty, that you would know she was fit to gallop on any ground, and yet, though often raced upon ground as hard as adamant, her sinews never went wrong in the slightest.

No, gentlemen, I would disagree with the learned Professor, for in a great number of cases before the over-extension of the check ligament has occurred, the weakly, ill-conformed perforans or perforatus tendons had given way from a want of cohesion or tonicity of their histological elements. I am of the opinion that it is this want of cohesion which, in a large degree, causes the cart horse to be so liable to this lesion, and if only their tendons were as perfectly developed as their muscles, results would be very different. No, gentlemen, in the breeding of the cart horse the large hairy leg is sought to be propagated, whilst the flinty leg, which will stand the test of hard work, is discarded; utility is again sacrificed for fashion.

I speak to men, all of whom know the advantages of the cross-bred Irish horse. Take him as he is, he may not fill the shafts of a brewer's float as well nor carry the absurdly heavy harness with its useless brass trumpery, but put him to work and he is sound and working when the Clydesdale and Shire have exhausted your patience and defied your embrocations and blisters, in your endeavours to keep them sound.

The softness is nowhere more resident than in the tendons. It may have been my individual lot to come across condition, but by far the greatest percentage of leg lameness—mark you, I say leg lameness—lies in the perforans and perforatus tendons of themselves, the check ligament remaining unimpaired. Now don't mistake me, I ascribe full value to the heavy loads and to shoes with the toe pieces and high calks, but I claim that want of cohesion in the large tendons is the essential factor.

Inflammation may arise from direct physical violence or from excessive muscular action, and in a number of these cases the perforans is the tendon involved, because the muscular head of this tendon is much the stronger. Let us take a case where the tendons have been injured, in fact lacerated to

a considerable extent, and should it be a patient with the right description of tendon, is it not surprising how soon restoration to functional use can be accomplished and how little the ultimate usefulness of the animal is affected.

Rheumatism is in rare cases the cause of tendinitis, and whilst it is generally the great muscles of the lumbar and gluteal regions which are affected, yet in the form which is known as the influenza one, every tendon of each leg seems to be involved, and it is with great difficulty we can effect a cure. In fact, one's best efforts yield but doubtful results, so firmly established seem the structural changes.

Concussion as the result of jumping is also a cause of tendinitis, especially if the horse is not fit or if his muscles be not in due proportion to his tendons. After severe runs with the hounds horses "pull-out" the following day, stiff all round, all the legs being more or less what is vulgarly spoken of as "stocked." But this is more a condition of tired muscles than an affection of the sinews.

Moller says inflammation sometimes extends from the tendons, sheaths, or articular surfaces, to the flexor tendons, and the form associated with infectious diseases, and occurring during convalescence from thoracic influenza, always starts in the tendon sheaths. Personally, I cannot subscribe to this theory. I would ask the opinion of those present on this point, as there is a doubt on my mind as to the absolute truth of the doctrine. The tendon sheaths which principally come under observation are those in the hind leg, forming what is anatomically known as, and forming the bursa of, the extensor pedis, the bursæ at the point of the calcaneum, the flexor pedis perforatus tendon, and the internal divisions of the flexor metatarsi tendons. Distension of these bursæ may assume rather goodly proportions, and yet cause the patient little or no inconvenience; in fact, I have seen them disappear without any interference or treatment. But acute inflammation sometimes arises from external injuries, and we have then to face a most dangerous complaint—tendovaginitis—and it is with difficulty we can prevent it assuming a septic character. In these cases the fever runs very high, and the lameness most intense, involving inflammation of the joint. The bursæ of the flexor pedis perforans and perforatus at the knee are frequently the seats of inflammation, results of bruises or wounds. The swelling usually appears on the outer side of the joint, both above and below, rapidly assuming considerable proportions. The symptoms of all are more or less the same—lameness, heat, swelling, wincing under pressure. The limb is held and carried stiffly, and when the affection is near the joint there is distinctly imperfect extension and flexion, and where the tendon sheath is involved a swelling from distension of the bursa. Palpation will readily detect the various parts and to what extent they are affected.

If rupture has taken place, there will always be a complete inability to bear weight on the limb, or if it is placed on it there is a very remarkable flexion, and the toe of the foot is directed upwards. As there is nothing very special to be learned from a further discussion of the symptoms, every practitioner forming his own opinion from his own practical observation on the cases, I will dismiss this part of the subject and come to another section.

Prognosis.

The prognosis in all cases of strain of the back tendons is essentially unfavourable, as serious infiltration takes place into the interfascicular connective tissue and paratendineum, and the reparative process is low, the blood supply being so deficient; shortening is bound to take place when the more active inflammatory process is complete, in consequence of cicatricial contraction.

If, however, the tendinitis is the result of an external injury, and that the

reparative process is complete, our opinion will be entirely formed by our analysis of the tonicity of the structures, and if we can gauge this quality correctly our prognosis will be correct and our treatment will be successful—due allowance being made for right conformation and the work for which our patient is employed. When we find the suspensory ligament involved it is certain to be a serious case, and likely to be oft recurriug under trivial provocation. In next importance comes the perforans, then the perforatus. The older the case the less the chance of recovery, and with more than one affected the gravity is increased.

I will not trouble you with a description of the morbid anatomy of the structures when complicated with inflammation, as there can be no difference of opinion as to its course or the variety of its termination.

(*To be continued.*)

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting was held on Thursday, April 6th, at the Grand Hotel, Manchester, J. McKinna, Esq., presiding, and there were also present Messrs. H. D. Chorlton, E. Faulkner, P. Gillespie, Alfred Holburn, T. Hopkin, Wm. Kendall, S. Locke, and J. B. Wolstenholme, of Manchester; Arthur New, Ashton-under-Lyme; A. Munro, Altrincham; J. Kendall, Barrow-in-Furness; J. H. Carter, Burnley; Ernest S. Gubbin, Glossop; Colonel J. D. Lambert, C.B., London; A. M. Michaelis, Stockport; Hugh H. Ferguson, Warrington; Wm. Woods, Wigan; and H. Locke (hon. sec.). The visitors were Messrs. J. J. Garside and R. J. Collinge.

Letters of apology for non-attendance were announced from Messrs. W. A. Taylor, Alex. Lawson, Walter Packman, Geo. Howe, J. Clarkson, R. O. Stafford, R. Hughes, and J. Abson.

The PRESIDENT, in opening the proceedings, referred to the keen disappointment he experienced at not being able to be present at the annual meeting. His hope that the attack of influenza would have left him in time was unfortunately not realised, but the receipt of Mr. Carter's telegram, couched in such kindly terms, and the sympathetic letter from the society was, to say the least, a good tonic, which was much needed. He should ever feel deeply grateful to the members for their kindness, although he felt he had done nothing to merit it, and while returning thanks to each member he would especially mention Mr. Carter, the officers of the society (including its active secretary), and Manchester friends, who were instrumental in making the gathering a great success. It was certainly a bad beginning to make on his part after the honour which they had conferred upon him in electing him as president for the second year, but he assured them that if health permitted he would do all in his power to make the year a success, and in that way to acknowledge the honour placed upon him and one which he should always cherish.

On the motion of Mr. E. FAULKNER, seconded by Mr. S. LOCKE, the minutes of the annual meeting were taken as read.

Elections and Nominations.

The PRESIDENT proposed the election of Mr. S. Wharam, M.R.C.V.S., Leeds. Mr. CARTER seconded, and the motion was carried.

Mr. John Armstrong, F.R.C.V.S., Penrith, was duly elected a member of the Association, upon the proposition of Mr. E. FAULKNER, seconded by Mr. S. LOCKE.

Mr. WOLSTENHOLME nominated for membership Mr. Thomas Hadfield, M.R.C.V.S., of Chester.

Finance.

Mr. WOLSTENHOLME presented the balance sheet for the past year, from which it appeared that the balance in hand at the close of the year was £65 7s., or an increase of about £10 over the balance for 1897. The number of members was 89 as against 81 for 1897. This, he said, was extremely satisfactory from a financial and numerical point of view, but there were a number of subscriptions in arrear to the amount of £30.

Mr. CARTER moved the adoption of the balance sheet.

Mr. E. FAULKNER seconded, and the motion was unanimously carried.

Forthcoming Election of Members to Council.

This matter came up for consideration, when, after some discussion, it was proposed by Mr. WOODS, and seconded by the PRESIDENT, that Messrs. S. Locke and Alex. Lawson be the nominees of the society at the forthcoming election.

Mr. FAULKNER having supported, the resolution was carried.

Mr. FAULKNER then moved that the usual Election Committee, consisting of the officers of the society with power to add to their number, be formed for the purpose of carrying out the details in connection with the election.

Mr. E. S. GUBBIN seconded the proposition, which was carried.

Specimens.

Mr. CARTER exhibited a small Yorkshire terrier, which had been operated upon for cataract on the eye. His description of the case afforded considerable interest.

Mr. WOLSTENHOLME submitted a St. Bernard dog's foreleg on which there had been a tumour. From the extensive erosion of the bone it was evident the tumour was malignant, and he had very little doubt that it was of the sarcoma type.

NOTES ON MICRO-ORGANISMS AND THEIR PRODUCTS.

BY JNO. B. WOLSTENHOLME, F.R.C.V.S., F.R.M.S.

Mr. President and Gentlemen,—It has been suggested that a paper on bacteria might prove of interest; in attempting this I have endeavoured to deal with the subject in a broad manner, hoping thereby to promote discussion.

What are bacteria? They are exceedingly minute living organisms, some of which are endowed with the power of rapid motion. In length they vary much, but the breadth is more evenly maintained; some 25,000 of the round bacteria, or the same number of the elongated, placed side by side are required to make up an inch.

Do they belong to the animal or the vegetable kingdom? For many years a fierce controversy was waged on this question, but now they are regarded by nearly all authorities as belonging to the vegetable kingdom. They are spoken of as fission fungi, and are allied to the algæ. These minute organisms—so minute that a hundred may rest on the point of a needle—have been recognised from the earliest period of microscopical investigation.

Leeuwenhock, of Delft, Holland—the father of microscopy—in 1683 described accurately the shape and movements of several varieties he had

obtained from the mouth and decaying teeth. From this date onwards new forms were noted and described, whilst the floodgates of discussion and speculation were opened as to their nature, their bearing on disease, and other problems. It is, indeed, only within very recent years that any correct appreciation of the varying forms, habits of life, and true place of bacteria in the economy of nature have been obtained. This has been arrived at, first by methods having been devised by which one variety can be isolated from another, then by careful observation of the form of the constituents of the pure growth or culture, as it is called, noticing what kind of food suits best, how they act under varying conditions of heat, moisture, etc., what happens if they are introduced into a living animal, and a variety of other facts are observed.

In 1836 Schulze made a glass apparatus in which he boiled certain animal and vegetable substances. He then allowed access of air, but made it pass through sulphuric acid. He kept the same from May to August without the fluid becoming putrid or the growth of any micro-organism therein. Somewhat later Pasteur boiled milk in a glass flask, and for a cork stuck in the mouth of the vessel some cotton wool which he had roasted; the milk kept sweet for an indefinite period. These and other experiments proved that the putrefactive changes which ordinarily occur when milk, or infusions of vegetable or animal substances, are left exposed to the air, are due to something in the air, which something can be excluded by a net of cotton wool, which at the same time freely admits the air. A little later Pasteur showed that the same result was obtained if simply the neck of the vessel was drawn out into a narrow tube, and bent to the form of the letter S. In this manner the theory of spontaneous generation was entirely disproved.

In 1837 the yeast plant was discovered, and Pasteur made his great researches into its life history and resulting products. From that time to the present, discovery has followed on discovery, and from the accumulated facts a science has been evolved.

We have remarked that the vegetable kingdom alone possesses the power of living and building up organisms, from the inorganic or mineral kingdom. This power applies solely (with certain reservations) to those plants which possess green colouring matter. The fungi—such as the mushroom, the sugar fungi or yeasts, and bacteria as a whole—do not possess this colour, and are *not* able to build up their organisms, *i.e.*, to live on mineral food alone, they must have for their sustenance food which has been formed by some other living organism; thus mushrooms require a large supply of decaying animal or vegetable substances; moulds are seen developing on jam, decaying vegetables, leather, etc.; whilst bacteria are found everywhere —in water, in air, in the soil, in our mouths, stomachs, and bodies generally, everywhere, in fact, where pre-existing animal or vegetable tissue can be found.

There is a very close relationship between the yeasts—sugar fungi—and bacteria. This fact may be taken advantage of by noting how the former grow and multiply, together with the various chemical changes which are brought about during the process, which is called fermentation. Yeast, or barm, is that brownish frothy liquid which forms on the top of vats during the process of brewing in this country, or at the bottom of vessels when the German method is used. When examined with the microscope it is found to be made up of an enormous number of minute, rounded, or oval bodies, each of which is a separate plant. They are considerably larger than ordinary bacteria, so that growth and development may be observed with greater ease. The conditions under which growth takes place are somewhat rigid. Not only must the necessary food and moisture be present, but very considerable warmth is required. The infusion of malt, known as wort, is a very suitable

medium for growth ; it contains, amongst other substances, sugar and certain albuminoids. Let us suppose this liquid has been filtered so as to render it clear, that a little yeast has been added, and that a temperature of about 80° F. has been maintained; in a short time the clear liquid will have become turbid, bubbles of gas will be seen rising through the fluid, and a frothy mass will have formed on the surface. The liquid, which at first was sweet to the taste, has lost that quality, and has acquired a spirituous flavour, whilst the quantity of yeast has increased a hundred-fold.

When the process is examined under the microscope the individual yeast plants are observed to put forth one or more buds, which speedily become detached, arrive at full size, and recommence the cycle. This, under favourable conditions, will be continued until all the sugar or products which the organism can convert into sugar are used up.

The essential chemical change which has taken place in the fermented liquid, as a result of the growth and multiplication of the yeast plant, is that sugar (grape) $C_6H_{12}O_6$ has been split up or reduced, and a tall tower composed of three kinds of blocks, 24 in number, $C_6H_{12}O_6$ has been re-arranged so as to form four smaller towers, two consisting of three blocks each carbonic acid ($2CO_2$), and two consisting of nine blocks each alcohol 2 (C_2H_6O). The carbonic acid gas arises in bubbles and escapes, whilst the alcohol may be removed by boiling.

If we now carefully filter the liquid, raise it to the proper temperature, and re-sow therein the yeast plant as before, we shall find that no growth takes place, no alcohol is formed, and no carbonic acid gas arises. Some great change has been wrought in the liquid, either all food which the yeast plant can seize upon has been used up, or some product has been formed during the growth of the last colonies that are fatal to the development of the new plants.

In this respect we note a great resemblance between the manner in which yeast exhausts the fluid in which it lives and renders it incapable of supporting further yeast growth, and the manner in which such diseases as small-pox render the blood or other tissues of the body incapable of supporting the germs of a fresh infection in one who has within a certain period passed through the disease.

I may also point out that when the process of fermentation has been commenced in a suitable liquid, it is possible to kill all the yeast plants by heat, or remove them with a delicate filter, and that after their destruction or removal a certain amount of fermentative change will go on in the liquid, thus proving that the living yeast cells form a chemical product, which is capable of setting up by itself a preparatory stage of change or digestion. This chemical product is known as a ferment, and is similar to many other like substances. Take pepsin for example.

In milk there is a particular sugar—lactose—which has the chemical formula of $C_{12}H_{24}O_{12}$. Under the influence of the development of certain bacteria, this sugar, with a complex chemical composition, is converted into milk or lactic acid, with the much simpler chemical composition of $C_3H_6O_3$ which, by the block tower illustration, would appear as one high tower composed of four blocks, being reduced or simplified to four smaller towers of twelve blocks each A similar change occurs when grape sugar is attacked, when the tower $C_6H_{12}O_6$ becomes two of $C_3H_6O_3$. Under the influence of other micro-organisms, the lactic acid is further reduced to butyric acid and carbonic acid gas, and so on, as the action of one set of bacteria is concluded another comes into play, until at last such complex chemical structures as skin, muscle, and brain tissue are finally resolved to mother earth again in the form of the nitrates and nitrites of various metals. *Vide* the calcium nitrates seen adhering to mortar. *Vide* the immense beds of

nitrate of soda found in South America, the sole remains of vast hordes of wild animals. What is true of animal tissues is equally so with the vegetable. In time the mighty oak returns to the mineral kingdom, from which its protoplasm when living had built it up. As conditions of various substances familiar to us all, the direct result of the action of bacteria, let me instance the rancidity of butter, the ripening of cheese, the flavour and tenderness of kept flesh meat, and the putrid state when kept too long or under unfavourable conditions.

As a whole, is the action of bacteria baneful or beneficial? Undoubtedly beneficial. Had it not been for the action of these minute organisms, animal and vegetable life would have disappeared from our globe long ago, for they are constantly converting the dead remains of animal and vegetable existence into substances with new living animals, and vegetables may take up and make part of their organisms, which in turn give back their very bodies to re-clothe future and successive generations.

Up to the present I have said nothing of the form or manner of growth of bacteria. The varieties in shape may be reduced to a small number. First, there is the round or oval form, *Micrococcus*, to which special names are given when they occur in groups of 2, 4, or more. Second, *Bacillus*, rod-like. Third, *Spira-bacteria*, comma, vibrio, spirillum.

Bacteria multiply in two ways, (*a*) by building, as noticed in connection with the yeasts; (*b*) by spore-formation—which also goes on in yeasts, although I did not allude to it. This method resembles seed production.

Some bacteria are motionless, others have the power of movement. Some progress by an undulating movement, as an eel or leech in water, others do so by the aid of a minute whip lash at one extremity, or of a number of such tiny lashes projecting from the side and ends.

In speaking of fermentation, I have endeavoured to show how sugar becomes reduced to alcohol and carbonic acid gas during the growth of the yeast plant. Also, how milk sugar becomes reduced to lactic acid, and then to butyric acid, in consequence of the action of certain bacteria. I must now remind you that the sugars are comparatively simple chemical compounds compared with many substances which it is the function of bacteria to break down or reduce. Thus the chemical formula for grape sugar is $C_6H_{12}O_6$, that of (Lecithin) one of the higher fats is $C_{12}H_{84}NPO_9$, whilst the formulæ of brain and muscle tissue are more complex still. Thus when micro-organisms exert their reducing power on these exceedingly complex substances, the first chemical products of such reduction may be exceedingly complex also. Many of them are highly poisonous, and are referred to in the newspapers as ptomaines. Thus we hear of ptomain poisoning.

Scientifically, these chemical substances are divided into three classes: 1. Ptomaines or alkaloids; 2. Abumoses or tox-albumens; 3. Enzymes.

The two former are directly poisonous; the enzymes are ferments, harmless in themselves, but have the power of inducing chemical changes in proteid substances, to form poisonous albumoses.

As an example of the first group, I may mention "Cadaverin," an alkaloid formed during the putrefaction of flesh $C_5H_{14}N_2$.

The poison of the albumoses is allied to that formed by living snakes.

Bacteria of Disease.

For our purpose this evening we will divide bacteria into two classes: (*a*) Those which are known to produce disease by their action on animals; (*b*) Those against which no evidence of such is at present forthcoming. In speaking of particular micro-organisms as the actual agents in the production of certain diseases, it will be well if I read to you the conditions laid down

as determining whether such is the case or not. They are known as Koch's postulates.

1. The micro-organism must be found in the blood or other tissues of the man or animal suffering from, or dead of, the disease.

2. The micro-organism must be isolated from the blood or other tissue, and cultivated outside the animal body, and these cultivations carried through successive generations.

3. This pure cultivation must, when introduced into the healthy animal, produce the disease in question.

4. In the inoculated animal the same micro-organism must again be found.

This recital will incidentally inform you that most of the pathogenic—that is, disease producing—organisms can be cultivated upon and in various substances and fluids outside the body of animals. Some of the favourite media for such purpose are beef-tea, gelatine, milk, raw potato, etc.

Certain conditions must be observed in the cultivation of bacteria. First, a certain amount of *heat* is necessary. If this is not supplied, the organisms cannot develop. It is due to this fact that many animal and vegetable substances can be kept from putrefaction for an indefinite period, if the temperature is low enough. Ex: frozen mutton, and rabbits from Australia. Again, if the heat is too high, either the organisms are killed or they cannot develop. The temperature of boiling water, when a moist heat, is sufficient to destroy most bacteria, but not always the spores or seeds. Between these two extremes great variation exists as to the warmth necessary for the growth of different organisms.

Some organisms can only develop when oxygen is present in the gaseous form. Others can develop in its presence or in its absence; whilst others are unable to develop in the presence of that gas. There are also many substances in nature, as well as others formed during chemical processes, which can arrest or prevent the development of micro-organisms, and even destroy their spores. The ancients knew well that certain balsams and spices had this property, and made such use of them that by the process of embalming, the bodies of human beings and animals have resisted putrefaction from their day to this present. The long list of antiseptics and disenfectants is that of substances possessing the quality I am referring to.

Let me now turn your attention to several diseases consequent on the development of bacteria within the animal body.

1. Wool sorter's disease, malignant postule, anthrax, a deadly disease of man and certain animals. *B. anthracis.*

2. Glanders, a fatal disease in man, the horse, and certain other animals. *B. mallei.*

3. Tuberculosis, a fatal disease in man, cattle, horses, many mammals, and birds. *B. tuberculosis.*

4. Lock-jaw. Tetanus, a fatal disease of man and animals.

5. Septiæcemia in mice. *B. of septicæ*: of mice.

In an animal dead from *anthrax* the bacilli may be found in the blood in almost every part of the body. In glanders the bacilli may be found in the lungs, in ulcers all over the body, and in other parts. *Tuberculosis*, they may be found in the lungs, liver, and many other parts of the body. In the *septicæmia* of mice, in the blood, and in other tissues all over the body. But in lock-jaw the bacilli are only found about their original point of entry.

Immunity.

Another phenomenon I wish to explain is that of immunity. Inoculation with the B. of anthrax will kill man, many animals, including guinea-pigs and mice, but will not kill rats. Inoculation with the B. of glanders will kill man

and horse, but not cattle. The B. of septicæmia of mice is most deadly to the house mouse, but is not fatal to the field mouse. Thus we see that certain animals are immune to diseases produced by certain micro-organisms. Occasionally it is found that individual animals possess an immunity which its species does not possess. Further, we know that after having survived some diseases, the animal possesses an immunity against same disease for a considerable period: *vide* small-pox. We also know of methods in which inoculation of certain products will prevent, counteract, or minimise, the effects of action of particular micro-organisms. Thus, you will see that immunity may be natural or acquired.

In connection with the subject of immunity, it is well to note how races of human beings become in course of time less and less seriously affected by infectious diseases which may be introduced amongst them, or due to climatic and other local influences which are favourable to the development of particular organisms. As an example of the first group, we may notice the disease measles. In this country, where the majority of the population for generations have been affected by it, we notice that our children, although much prostrated, only die in a small percentage of cases, whilst the disease in adults is rare. In a community, however, which has never had the disease, when once introduced it is a terrible plague with a frightful mortality amongst both young and aged. Syphilis affords another example of this fact.

An example of the second group is seen in the mortality amongst Europeans when in tropical and malarial districts, as compared with that of the natives.

I think you would be interested in a brief sketch of some of the facts in connection with acquired immunity, and the new methods gradually being adopted in the treatment of some infectious and contagious disease in consequence thereof.

The bacillus which produces anthrax exists in the soil of pasture lands and gains access to the body of sheep and oxen when grazing. It develops therein at an enormous rate, and produces a poison or toxin, which results in death.

One drop of blood from a diseased sheep injected into a healthy one will cause death in 24-48 hours.

The anthrax bacillus can easily be cultivated in beef tea, gelatine, etc., and when so grown is equally deadly as the blood of an affected animal. But experiments have proved that by growing the bacilli at certain temperatures on the one hand, or of introducing certain chemical agents into the nutrient medium on the other, the bacilli not only lose their power to kill the animal into which they may be injected, but the very products of their growth in the blood of that animal are such as to prevent the normal deadly bacilli, if subsequently injected, from having a poisonous effect. (Pasteur's experiments at Melun, 1881, 50 sheep.) It has been shown also that the bacillus anthracis, cultivated in a special medium, gives rise to a substance which may be filtered absolutely free of the bacilli and its spores, and, when injected into the blood stream of a rabbit, will give immunity when afterwards inoculated with virulent blood, nay more, if a little of this fluid be mixed with the infected blood, and the mixture injected into a rabbit, no harmful effect follows.

The disease hydrophobia in man, and rabies in the dog, is due to the development in the system of a poison doubtless elaborated by a micro-organism, although none such has yet been definitely identified. This gains access by the wound inflicted by the bite of a rabid animal. Although this poison is present in the saliva, yet Pasteur has shown that it exists in greater quantity in the brain and spinal cord. Experiment has established the fact that if a little of the spinal marrow be mixed with water and injected

into a monkey, that animal will die of rabies. If a similar fluid be prepared from the first monkey and injected into a second, and so on to others successively, it is found that the monkeys no longer die. If at this stage the spinal cord of the last monkey be in like manner injected into the dog, and at intervals portions of the preserved spinal cords of the other monkeys are so injected in the ascending order as they were killed, a point is reached when that dog may be submitted to the test of inoculation with the most powerful poison, or bitten by a rabid dog, and no evil results will follow. Not only will the methods of passing the virus through a series of monkey result in this marvellous attenuation and protective value, but another and better method has been devised by the same man, viz., inoculate a rabbit with the poison, it dies of rabies, then a portion of the spinal cord of the rabbit is suspended to dry in a particular manner, in from 16 to 20 days the condition of attenuation which will not produce rabies is arrived at. From this starting point a dog is inoculated as before, and at intervals with the product of spinal cords which have been suspended a shorter and shorter interval; at the end that dog will withstand the most deadly rabific poison which is known.

The bacillus of tetanus (lock-jaw) is one which lives in the soil, and deep in manure pits of stables. It gains access to the body through a wound, sometimes a most trivial one. One of the peculiarities of this microbe is that it does not invade the body generally, but remains at and around the point of entry. Here it grows and reproduces its species, and, in so doing, a poison, a *toxin*, is produced, which is caught up by the blood stream and conveyed to the nerve centres, which in turn are so stimulated that the terrible muscular spasms of lock-jaw are produced. There is no doubt that a chemical product or toxin is the cause of these symptoms, for it is easily possible to cultivate the bacilli outside the body, then to filter the fluid in which they have grown, and heat the filtrate so that no trace of life remains. This fluid, when injected into an animal, produces all the former effects.

We note then that—

(*a*) It is possible to specially cultivate a deadly bacillus that, when introduced into a living animal, does *not* destroy life, but actually preserves life against that disease.—*Vide* Anthrax.

(*b*) That the filtered product of a deadly bacillus, when specially cultivated out of the body, has the power of rendering harmless virulent blood, for, if the two be mixed and injected, no harm results.—Anthrax.

(*c*) That virus may be attenuated and rendered protective by passing the same through a series of certain animals, or by drying in a particular way the tissue in which it rests.—Rabies.

I have shown you how a poison—toxin—is produced during the growth of the bacteria of tetanus, and how that poison produces all the symptoms of the disease. This toxin, having been prepared and perfectly separated from the producing bacilli, may be diluted and mixed with iodine, then if this product is gradually and progressively injected into an animal—say a horse—for a considerable period, it is found that it is impossible by any means to produce lockjaw in that horse. A great deal more happens, for if blood be taken from that horse, and the watery part of it—serum—be injected into another horse, then that second horse is found to be immune, *i.e.*, will not take on lockjaw when the bacilli are introduced. The protective substance which the serum contains is known as an anti-toxin. This is the secret of the serum treatment for diphtheria.

The toxin resulting from the cultivation of the bacteria of diphtheria is in like manner gradually and progressively introduced into horses for the requisite time. Then the blood is abstracted, the fluid portion of which is separated and then used for the inoculative treatment of diphtheria. The

anti-streptococcus serum for treatment of puerperal fever is a similar preparation.

It has been shown that the blood serum of a rabbit rendered immune against tetanus, or diphtheria, has no destructive or retarding effect on the bacilli, but that it possessed the power of neutralising the poison developed during the growth of the bacilli. That is to say, the serum possesses an anti-toxic power, and not the power of killing the bacteria.

The toxin obtained by the cultivation of the bacteria of glanders, known as mallein, has proved a most valuable test for diagnosing or discovering the presence of that disease in horses when every other method has failed. The same may be said of tuberculin, which is the toxin of the tubercle bacillus.

The serum treatment of typhoid fever, and the "clumping" of the bacilli test for typhoid were explained.

Mr. WOLSTENHOLME then passed on to refer to the technique in the cultivation of micro-organisms, and exhibited a number of cultures.

He exhibited a new German autoclare, a Chamberland filtre, a new syringe by Dr. Roux, and a variety of other instruments in connection with the subject.

In conclusion, he referred to the increased facilities for studying the science, and hoped the paper and discussion would emphasise the need of keeping abreast with the tide of discovery.

Discussion.

The PRESIDENT complimented Mr. Wolstenholme upon his admirable and instructive paper, and emphasized the importance of veterinarians becoming bacteriologists.

Colonel LAMBERT, addressing Mr. Wolstenholme, said he assumed it was well established that the bacillus of tetanus located itself near to the injury.

Mr. WOLSTENHOLME: I cannot say. As a matter of fact, by experiment and observation both during life and after death, it is said that the bacilli are not to be found in the blood and other tissues, but only at or about the point of entry.

Mr. S. LOCKE: In cases of bacillus of tetanus, we have had recovery very often by attacking the injured portion either by actual cautery or excision, and this leads me to believe that we have destroyed the virus.

Mr. NEW: Is it a recognised fact that there are cases of tetanus without a wound?

Mr. WOLSTENHOLME: It is very difficult to say. I believe that if you ask Dr. Delépine he would tell you that in his opinion there was no tetanus without a wound.

Colonel LAMBERT asked the members whether they often had a great many wounds without any case of tetanus, or whether they thought it was a contagious and soil-produced disease, and, if so, whether it occurred more in certain districts than in others.

Mr. WOLSTENHOLME: I might point out that in certain earths, if you take any weapon, dip it into this earth and then stab some animal you may depend upon having tetanus.

Mr. HOPKIN pointed out, in confirmation of the remarks just made by Mr. Wolstenholme, that a veterinary surgeon from Chesterfield had given the Association the percentage of cases of tetanus in a year, and it was enormous, and had stated that certain portions of the district were noted for tetanus. As to idiopathic tetanus, it was very difficult to say whether or not a horse or animal had received a scratch quite sufficient for inoculation, on account of the hair covering, but he would like to have heard whether those cases arise in the human subject, because it would be easier to detect in the latter.

Mr. FAULKNER thanked Mr. Wolstenholme for his most interesting and instructive paper. Cases of tetanus, which he had noticed on several occasions, and which he understood to be the idiopathic form of tetanus, he now believed were due to wounds unobserved owing to the character of the covering of the patients.

Mr. MONRO said he had seen cases of tetanus generally in small punctured wounds, but not in large ugly gashes. How did Mr. Wolstenholme account for this?

Mr. WOLSTENHOLME: Of course, I am only retailing to you what I have read and heard, and one has to apply his own general knowledge. For example, the bacillus of tetanus cannot develop in the open air, but has to develop away from free oxygen, so that you can quite understand that in the case of punctured wounds deep in the blood vessels there would be a suitable ground for the growth of the bacillus, whereas in a skin wound—quite exposed to the atmosphere—the bacillus would be more likely to come in contact with the oxygen.

Mr. CHALLINOR: It is a subject that we really hear a lot of from our clients, and I think it is very wise for us to know something about it. As to Chesterfield, it is a colliery district, and this, I think, will be the reason why it was noted for tetanus. You have tetanus from superficial as well as from other wounds. I have seen rather more from superficial wounds.

Mr. WOODS proposed that a very hearty vote of thanks be given to Mr. Wolstenholme for his valuable and interesting paper.

Colonel LAMBERT seconded the motion, which was unanimously carried.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary general meeting was held on Thursday night, the 4th inst., at the Royal College of Veterinary Surgeons, 10, Red Lion Square, W.C., Mr. J. Sutcliffe Hurndall, the President, occupying the chair. There were present: Messss. Butters, Roots, Dowell, Sampson, McCormack, Stainton, Slocock, Gostling, Clapp, Walpole, Wright, Porch, Savournin, Perryman, Stroud, Harrison, Payne, Smith, Hunting, Humphrey, Clarke, Whitlamsmith, Rowe, May, Phillips, Rogerson, Macqueen, Barrett, Col. Durrant, and Col. Rayment; and two visitors.

On the motion of Mr. Hunting, seconded by Mr. Porch, the minutes of the preceding meeting were taken as read.

Letters of regret at inability to attend were read from Major R. Moore, A.V.D., and Mr. Trevoa Spencer.

Nominations and Elections.

Mr. JAS. BAXTER was nominated by Mr. J. Sutcliffe Hurndall, Professor Hobday, and Mr. W. S. Mulvey, for election as a Fellow of the Society.

The following gentlemen, nominated at a previous meeting, were then unanimously elected Fellows of the Society: Mr. W. Murts, Mr. Bertrand L. Secker, Mr. Louis Barrett, and Vet.-Lieutenant Williams, A.V.D.

Specimens.

Mr. H. G. Simpson sent particulars of a case of "fœtal dystokia" with photographs.

Major PHILLIPS: A horse in the riding school a day or two back in going over the jumps caught its fore foot on a rod. The horse was a gelding seven years of age. It was found there was a fracture of the os suffraginis; such a

fracture as I have never seen before. The bone was fractured into nearly 100 pieces, of which I have 75 here.

I have another case to bring to your notice. This was a horse in draught in the Woolwich Arsenal. It took fright at something and bolted. It came in collision with a trolley loaded with iron, and in its endeavour to leap over the trolley the off hind leg of the animal came in violent contact with the vehicle, severely injuring the leg from the hock downward. The horse was removed to the infirmary, but I could not satisfactorily diagnose the case. There was an undoubted fracture, but I could not locate it. The animal was put in slings for about nine weeks and then destroyed. It was found that the outer condyle of the femur was fractured in several places. The top of the tibia must have been severely contused, ossification taking place.

Mr. BUTTERS: The specimen forwarded by Mr. Simpson is very interesting, and I think the thanks of this meeting are due to him for the trouble he has taken in bringing same under notice. Seconded by Mr. SLOCOCK and carried.

Mr. PORCH: I should like to propose a vote of thanks to Major Phillips for so kindly submitting these specimens to the meeting. We frequently have cases of fracture, but, as he says, it is not always easy to locate the same. This was duly seconded and carried.

The CHAIRMAN: The next item on the agenda is the further discussion of Mr. Barrett's paper, "The Sale of Horses considered from a Legal Standpoint," but, as Mr. Barrett is at present out of the room, it would perhaps be as well to ask Mr. Clapp to read his paper on "Docking," which he so kindly deferred reading at a previous meeting.

"DOCKING."

BY A. H. CLAPP, M.R.C.V.S.

Mr. President and Gentlemen,—The paper I have the honour of reading is upon the ever debatable question of "docking": a subject alike interesting to veterinary surgeons, horse owners, and the public in general. I will not suppose that all here present will find themselves in complete accord with my views, but if my reading is productive of wholesome discussion my principal object will be accomplished.

It is a curious fact that those who are not immediately, by which I mean actually, concerned are the first and loudest to denounce the system or practice of docking; and there are some who do not hesitate to describe the act as "wanton mutilation," as unnecessary as it is cruel. I shall endeavour to show that in docking there is no cruelty if performed by a skilled hand, and that the practice is rendered a necessity in regard to the safety of the public—a consideration far greater than our fees.

Before explaining the operation of docking, it would be well to consider what is meant by the word "cruelty." It is a term used, I take it, to express the infliction of grievous pain without a legitimate object either existing in truth or honestly believed in. Is this, then, a term to be applied to the practice of docking, which has for its aim a number of considerations, and in particular the lessening of danger both to the public and the driver by a better control over the animal? I will not say there is no pain caused by docking, but properly performed such pain is greatly reduced. It is often necessary to inflict even great pain to obtain a beneficial result. Would this be cruelty? No, for what is or is not cruelty must depend upon the consideration for which the act is performed and the skill of the operator. But so long as unqualified men are permitted to dock and publish their ignorance in drastic language of the method adopted, so long will the act

be regarded as inhuman. And it behoves every member of the Royal College of Veterinary Surgeons to bring every check to bear upon the opportunities given to the "man in the street," so-called, to dock a horse for a paltry fee and without regard to the unnecessary pain the animal is made to suffer in consequence.

By "docking" we understand the removal of a portion of the tail by amputation. Docking became general in England about the time of Charles II., and was then performed with the idea of making the animal's back stronger. This is of course absurd. The domestic animals that are subjected to this operation are horses, sheep, and dogs.

Let us for a moment consider the anatomical structure of the tail, say that of the horse. The bones of the tail—the coccygeal vertebræ—number from 15 to 18. The vertebræ gradually diminish in thickness from first to last, and are united by ligamentous fibres spread over their surfaces. The muscles of the tail are very powerful and consist of four pairs. They are: the erectorcoccygis, which elevates the tail and pulls it on one side; the depressor coccygis, which depresses the tail and inclines it to one side; the curvator coccygis, which also inclines the tail to one side; and the compressor coccygis, which entirely depresses it. The blood supply is derived from the internal iliac arteries, or really from the lateral sacral artery, and consists of the lateral and middle coccygeal arteries. These vessels give off numerous branches which supply the muscles and integuments. The veins go to form the lateral sacral, which assists in the formation of the internal iliac vein. There are six or seven pairs of nerves, given off directly from the terminal portion of the spinal cord. The hairs clothing this appendage are the strongest and longest of the body and constitute "the tail."

The next point worthy of consideration is the use of the tail in its natural state. In the horse its chief use is to assist the panniculus carnosus in the removal of flies and other winged insects that irritate from the surface of the body. In the sheep its use is also to disperse flies, and in the ewe to afford protection as a covering to the genital opening and udder. In the dog it is believed to act as a rudder during progression, a value which has been attributed to the horse's tail, but which should be accepted with caution.

I will now pass on to the operation of "docking." It is performed as follows: the horse is placed in a loose box or stall with a blinker bridle on. The hair of the tail is taken back and tied up to the point at which amputation is to be performed, which should always be a joint. The length of tail amputated varies, but usually from four to eight inches is removed. The hair is next removed immediately behind that point and a tight ligature applied. I have always found it advisable to leave the ligature on the tail for some time before the operation as I consider it numbs the parts and thus lessens pain. The actual amputation is performed by means of an instrument termed the docking machine, which is familiar to all, and therefore needless of description. The twitch is then applied and a front foot held up; the operator stands on the near side, places the tail, which is firmly held by an assistant, in the receptacle of the machine, and by a powerful downward movement of the upper handle of the instrument quickly severs the part.

The next step is to allay hæmorrhage. This is usually performed by means of a searing iron specially made for the purpose. Care should be taken not to use the iron too hot, and it is as well to supply a sufficient quantity of resin to the stump to act as a film. I myself do not think the application of the actual cautery a necessity, and consider that such treatment greatly increases the suffering of the patient. In most cases if the ligature is properly applied very little hæmorrhage, if any, occurs. Some practitioners simply

apply a compress of iodoform and cotton wool to the stump. The ligature should be left on from six to eight hours.

Another method of amputation sometimes resorted to is by means of a scalpel, flaps of skin being left and afterwards brought together with sutures over the bone. This method is doubtless the more surgical and neat, but nevertheless the more painful. Some practitioners inject a solution of cocaine into the tail before operating.

The common practice is to allow the horse to work almost immediately after this operation, but I think common sense should dictate the inadvisability of such a proceeding. I think that the animal should be rested until the operation wound has healed, which should be dressed daily with antiseptics. I apply a mixture of one part of iodoform and three of boracic acid, twice daily. Perhaps such after-treatment may be considered unnecessary, but I hold that this operation as well as any other should be carried out in a scientific manner. If all veterinary surgeons would insist that the wounded dock requires much the same treatment as an amputated human finger, this operation would not be looked upon in the unfavourable light that it is at the present time. I have never found any difficulty in persuading my clients to allow the horse to rest until the wound has healed. By such treatment one certainly renders this operation more humane, a point which ought to receive every attention.

Respecting the age at which this operation should be performed. Some foals are docked shortly after birth, and I should certainly uphold such practice if one could definitely destine the future use of the foal, as docking at that age is far less painful than when performed on an adult. However the question of indiscriminate docking by such practice naturally arises. I do not see why colts, now that castration is largely performed in the standing position, could not be docked if necessary at the same time. I certainly advocate that all horses should be docked before three years old, as far as is possible. You may doubtless remember the unsuccessful prosecution of the R.S.P.C.A. as to the cruelty of docking foals a few days after birth. The case I refer to was tried in East Yorkshire in July, 1889, and is recorded in *The Veterinary Record*, vol. ii., No 55.

The operation of docking has been greatly discussed in our daily newspapers, and unfortunately in some of these the operation, by the description given, is made to appear far worse than is really is. One such description is as follows, and is taken from *The Star* of October, 1898 :—Under the heading of "The Wanton Mutilation of Animals," the following words are used :—"For the benefit of the uninitiated (of which the writer was apparently himself one) it may be explained that the horse's tail is docked thus: The tail is tied round at the third joint with a piece of cord, made as tight as two men can pull it. The tail is chopped off between the third and fourth joint with a knife struck by a heavy hammer. The bleeding stump is seared with a hot iron."

Such a description is liable to represent docking as an operation of the cruellest type, and certainly when performed in this manner should be regarded as a decided act of cruelty.

It is such descriptions as these that a certain body of people seem to cling to, and who are bigoted and ignorant enough to maintain that docking cannot be anything but an act of cruelty; but I will guarantee to prove to any such person by ocular demonstration that such is not the case: further, that in some cases docking is of the utmost necessity and a perfectly humane act.

Next a few words respecting the sequels sometimes following docking. They are excessive hæmorrhage and tetanus. Fortunately I have never been troubled by either, and I maintain that if the operation is performed in a skilful manner and ordinary antiseptic precautions used, both with regard to the treatment of the wound and the animal's surroundings, they seldom occur.

In the case of tetanus following docking, it is the usual practice to further amputate a portion of the tail. I think this is open to a deal of question as to its advisability, as by the time the symptoms of tetanus are exhibited the circulation of the toxin generated by the bacillus has become general and is not confined to the stump.

Occasionally docking has to be performed as a curative measure. I refer to that condition of disease of the coccygeal vertebræ usually brought about through injury.

Before passing from docking of the horse, I should like to say a few words respecting "nicking." This practice consists in the destruction by incision of the muscles on the under surface of the tail, and is done with the idea of making the tail "cock up" so as to give the animal a smarter appearance. This, in my opinion, is a most cruel and unnecessary act, and cannot be too severely condemned.

The usual manner of docking sheep is as follows: The tail is amputated at the second or third joint with a sharp knife, and some astringent powder dusted on the stump to allay hæmorrhage. It is usually performed a few days after birth, sometimes when the animal is three or four months old. Some amputate the tail, placed on a block, with a red hot iron.

Dogs are docked by applying a ligature and amputating behind this with a sharp knife, struck sharply by a hammer. Laymen often bite off the tail a few days after birth.

I will now pass to the most important part of my paper, viz., the question as to the necessity of docking. This involves a consideration of the class of horse and the work required, and one cannot argue this question satisfactorily without fully considering these points. This raises the question: Can the undocked horse be used in all instances without risk?

I certainly do not agree with indiscriminate docking, by which I understand unnecessary docking. In many instances this practice is resorted to merely for fashion's sake, and there are many well-known horsey men who uphold the practice for this reason alone. It may be that a docked horse has a smarter appearance, but I do not think this is a sufficient consideration to justify the practice. If, however, it renders the animal more controllable, as in the case of castration, then must it be regarded as necessary.

The only class of horse I think should be docked are light horses used for driving purposes, they being the most liable to getting the tail over the reins. There are many I know who would ridicule such an argument and would probably say that if you can't drive a horse without letting him get his tail over the reins you ought not to drive at all; but it should be remembered that all persons in charge of horses are not professional coachmen. I have frequently seen accidents occasioned through the animal getting the reins under his tail, and can myself testify to the difficulty in releasing them when once in that position. It might be maintained that a docked horse can still get the reins under the tail. Admitted, but in such a case I should say the reins were held in a slovenly manner. There are, I believe, instances of horses being quite unmanageable in harness before being docked becoming easily manageable afterwards.

In the case of trotters, docking is not necessary, as the driver sits immediately behind the horse and holds the reins, one in each hand; also in many instances their tails are tied.

It will thus be seen by driving a docked horse the danger of an accident is largely diminished.

Another class of horse, viz., hunters, has more than its share in the discussion, and some very interesting correspondence has appeared on this subject in *The Daily Mail*, *The Field*, and other papers, by gentlemen, several of whom are well known in hunting circles. The chief reasons put

forward in favour of the practice of docking hunters seem to be that if not docked they are liable to mud-fever, and that the long tails make it uncomfortable for the rider and his friends by switching the mud and dirt about. I would strongly advise gentlemen afraid of mud and dirt not to hunt—there are other other ways of acquiring both in the hunting field. I cannot believe that such arguments are put forward seriously, but that the real reason is appearance sake. Such being the case, this question in regard to hunters must at once be dismissed as unnecessary. If, however, by docking a hunter he would become better able to face a jump, or more surefooted, then by all means dock him; but up to the present I have never heard of a sportsman who has attributed either of these benefits to docking.

I was very pleased to see the decision of the Council of the Royal Agricultural Society, viz., "That at and after the Maidstone meeting of 1899 no foals with docked tails be allowed to be exhibited at the Society's country meetings, that at and after the meetings of 1900 the same shall apply to yearlings as well as foals; and that at and after the meeting of 1901 to two-years also." Unfortunately, as you all know, at the next meeting of the council this resolution was thrown out. I should certainly agree that all horses entered in shows must be must be undocked, except those entered in driving classes.

Another reason given in support of docking is that of cleanliness, and the holders of this argument seem to have no medium between a sweeping tail and a docked one. If the tail is properly trimmed up to, or just below, the end of the dock, I think that the matter of cleanliness in both docked and undocked might be classed as equal.

Yet another argument in support of docking is that it makes the animal more saleable. The only reason I think for this is that the eye of the public has become accustomed to seeing docked horses, and not that the docked horse is actually of more value. If it became general for horses to be sent to sale yards undocked, as now-a-days a good many are, I do not think the horse market would in any way suffer.

It has been asserted by some that docking is merely performed for gain, and that the only justification for this operation is gain. That there is just as much right in docking as in firing, blistering, castration, or any other painful operation which is performed with the idea of increasing the animal's value. I take it that the word gain, as used in this sense, implies not only to increasing the value of the horse but also to the putting of money into the veterinary surgeon's pocket, and that so long as we can get a fee for docking, continue to dock, whether necessary or not.

I must admit that as things are at present we must often perform this operation for our clients unnecessarily, as if we refused we should doubtless lose their custom, but I think I am safe in saying that there are numbers of gentlemen of our profession who would prefer to refrain from unnecessarily docking.

How anyone can contrast docking with firing and blistering I cannot understand. The latter, I believe, are usually performed to alleviate suffering by counter-irritation. One might just as well say that to apply mustard or blister to the throat, chest or sides, in respiratory troubles, is done for gain and not as a curative measure. Unnecessary firing and blistering I strongly condemn, but when performed for the alleviation of suffering we cannot but justify ourselves in its practice. There are necessary and unnecessary operations, but it will be sufficient to confine our attention to the former and discard the latter.

With regard to the docking of dogs, it is needless for me to say after my forerunning remarks, that I consider the practice wholly unnecessary and cruel, and am pleased to say that the practice is fast dying out.

As regards sheep, however, this operation is necessary from a sanitary

point of view. On referring to Steel on the sheep, I find he says: "It (docking) is generally resorted to as a routine sanitary measure, for the organ, when retained, accumulates filth, and may become so matted down by dried fæcal matter in diarrhœa and dysentery as to cause retention of the fæces through obstruction, also its dirty state may attract the fly."

These remarks I thoroughly agree with, and consider it a necessity in these animals.

In conclusion, gentlemen, allow me to sum up my remarks in these few words: That if by the operation of docking, performed skilfully and with as little infliction of pain as possible, and by qualified men only, we can render an animal more serviceable and useful to mankind, let it be regarded as necessary, but if for no other reason than as a curative measure let it be regarded as such. It only now remains for me to say that I trust you will find in my paper some points for an interesting and instructive discussion.

Permit me, Mr. President and gentlemen, to express my appreciation of the patient hearing you have given me.

Discussion.

The CHAIRMAN: We shall now be glad to hear any remarks on this subject. I hope you will show your appreciation of the trouble Mr. Clapp has taken in writing his paper by joining freely in the discussion. The subject is an interesting one both to the profession and others, and I trust no uncertain sound will go forth from a society like this.

Mr. DOWELL: I think Mr. Clapp has wrongly named his paper. It should be "Against Docking," I consider. With regard to docking hunters, Mr. Clapp says a man who does not want to get dirty should not go hunting, but I can't quite see the point of this. I am of opinion that if Mr. Clapp had to hunt with a long-tailed horse he would soon find out the inconvenience, and get it docked as soon as possible. With reference to what *The Star* said about docking, the process they describe applies (although of course not as far as the "hammer" is concerned) to docking sheep, but certainly not to horses.

Major PHILLIPS: I think what we as a profession ought to do is to set our faces against the fashion of docking. It is as much a "fashion" as the way we dress, or ladies wear their hair. As regards hunters, surely the hair can be clipped short enough to avoid dirt being splashed up. It seems to me that the fashion is to dock hunters more than driving horses. I cannot see the use of it. With reference to 'bus horses, it is most painful to see the way in which these animals are docked. I have often seen the poor brutes in their stables stamping and very uncomfortable for the want of a little tail. I think the only justification for docking is in the case of draught horses which are worked in vehicles where the drivers sit low, so that the reins would easily get under the tail, and probably cause serious accidents. I fail to see where the general utility of docking comes in when you can use the scissors to shorten the hair when necessary.

Colonel RAYMENT: I think I understood Mr. Clapp to say, he did not see the use of re-dockingtin the case of tetanus. If I remember rightly the infection is generally local. If you destroy the bacillus altogether you more or less remove the source of the toxin. I think I should re-dock myself in such a case, as I don't see how the toxin is to multiply itself in the system if there is no bacillus there. I agree with Major Phillips—I used to drive a low trap—it was my misfortune to own a pony which had an abominable habit of getting his tail over the reins. I think horses driven in that class of trap should be docked. As far as hunters are concerned I have not had much experience in this country, but have ridden undocked Arabs and never got splashed.

Mr. PORCH : In the first place, as regards putting a ligature round the tail. I certainly approve of using a ligature, but not keeping it on several hours previous to operating. I prefer putting it on just before the animal is docked, and taking it off immediately afterwards. I fail to see how it can lessen the pain in any way to have the ligature on some time before docking—I think rather it would increase same. There must be a great deal of pain from the ligature itself which compresses the tissues. As to stopping hæmorrhage, I agree with the searing iron, although perhaps it does not look quite so scientific as the other method. In my opinion there is nothing so successful as hot iron, and I have docked several hundreds of horses. I find in using the hot iron that the tail heals without any trouble whatever, and I have never had one bad case. I have seen a case of tetanus following the operation, but fortunately it was not a horse which I docked myself. As to resting horses after docking, I don't think this is at all necessary, unless you are going to put them into a trap several inches too short, so that their tails will rub against the dash. As far as an omnibus is concerned, the horse does not touch anything and probably suffers less than he would do in the stable, where he would be liable to rub his tail against the wall or sides of his stall. If we had to rest every horse that was docked it would mean keeping some vehicles in the yard. I do not think it necessary to dock hunters, but harness horses should be docked. I do not know of anything more likely to cause an accident than when a horse gets his tail over the reins. Major Phillips made reference to the fly pest, and I quite agree with him that flies are a great source of trouble to horses, but I do not see that leaving the tail undocked would make matters any better in this respect, unless indeed the tail was allowed to grow so that it almost touched the ground, when it would probably be of some service in brushing the flies off.

(*To be continued.*)

CONTAGIOUS DISEASES ANIMALS ACT, 1864 AND 1899.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending 13th May, 1899.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of April.)
None	Outbreaks 276 Slaughtered 3,060	Outbreaks 55 Attacked 87	Dogs 1 Other animals 0 Destroyed 91	Outbreaks 36 Attacked 91	Outbreaks 95

SCOTLAND.

None	Outbreaks 10 Slaughtered 262	Outbreaks 1 Attacked 3	None	Outbreaks 22 Attacked 35	Outbreaks 14

IRELAND.

None	Outbreaks 20 Slaughtered 572	Outbreaks 1 Attacked 1	Dogs 4 Other animals 0 Destroyed 15	None	Outbreaks 31

EXTRACTS FROM AN ADDRESS OF WELCOME TO THE ALUMNI OF THE FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE, McGILL UNIVERSITY, ON FEBRUARY 11, 1899.

BY DUNCAN McEACHRAN, F.R.C.V.S., D.V.S., V.S., EDIN., DEAN.

"Vis Unita Fortior."

Mr. Chairman and Gentlemen,—It is with feelings of no ordinary gratification that I embrace this privileged opportunity of addressing a few words of welcome to you, gentlemen Alumni of the Montreal Veterinary College, and of the Faculty of Comparative Medicine and Veterinary Science of this University, assembled here, as stated in the invitation of your honorary secretary, as it appeared in the *Journal of Comparative Medicine*, "to talk over old times, see old faces, renew your allegiance to your college parents, and give them by your presence renewed interest and courage in their work."

In the name of your college, your college parents, and the university, I bid you welcome, and I trust that your visit will be pleasant and profitable to you all. For myself let me say that this spontaneous gathering of my old pupils affords me inexpressible delight—as an evidence that the labours of your teachers have been appreciated by those whose appreciation is the greatest evidence of their value.

Thirty-three years ago, a third of a century, I had the pleasure of delivering the inaugural address of the Montreal Veterinary College in a little brick building adjoining the Theatre Royal in Coté Street, then occupied by the Faculty of Medicine. One of the first pupils to enter I am glad to see here to-day—Mr. C. J. Alloway. Then it was all hope and uncertainty. At that time even the medical school was in an early stage of its evolution, and the university itself was a small struggling institution, weak financially, consisting mainly of a vigorous and prosperous self-supporting medical faculty, a faculty of law, and a faculty of arts, but strong in the great mind and scientific enthusiasm of its learned principal, Sir William Dawson, to whom, and to whose labour we must justly attribute the magnificent developments which, thanks to the munificence of those liberal benefactors, commencing with the McGills, Molsons, Redpaths, Lord Strathcona, and last, but certainly not least, Sir William McDonald, Lord Mount Stephen, Principal Dawson was privileged to see as a result of his life work.

He was largely instrumental, first in arranging the inauguration of the course on veterinary science in connection with the medical school—the liberality of which faculty alone rendered it practicable, as funds could not be obtained to meet the expenses of independent courses of lectures on co-lateral subjects—as he was, nearly a quarter of a century later, in arranging for the school becoming a faculty of the university. It is not generally known, however, that this faculty, like the medical in early days, has not received any financial aid from the university, the buildings and equipments, such as they are, being private property.

You have had an opportunity this morning of visiting the various departments of the university, and I am sure those of you who have not been here for a few years must have been amazed at the extent and magnificence of them all, and let me assure you that the developments of McGill are but an evidence of the development of this country. Many of you are from the great country to the south of us, the United States, a country great in extent, great in resources, great in wealth, in educational and scientific development, and, as recent events have demonstrated, as great in war as in peace—and you are proud to belong to such a country—as well may you be.

We Canadians, who know our country, know and feel that we also have a country possessing equal possibilities, of greater size, equal soil, equal climate, and in undeveloped resources equal in every respect; wanting only men, money, and time for their development.

Since my appointment as Chief Inspector of Live Stock for the Government of Canada, over 23 years ago, it has been my good fortune to enjoy the confidence and co-operation of the officers of the United States Government occupying similar positions, so that so far as health of animals was concerned, our official relations have been most friendly and reciprocal. It is unnecessary for me to say to you, who are sons and citizens of the great American Republic, that you have from first to last constituted a large proportion of our undergraduates, and your country has offered the largest field for employment for our Canadian graduates, and many of them occupy very important positions in the service of your government, both in the military and civil service as well as in private practice, and as teachers in educational institutions, both veterinary and agricultural colleges, as well as appreciated contributors to your literature.

In both countries I am proud to find among the most earnest and successful workers in the preservation of the nation's greatest wealth and the health of the people many of our alumni.

The paramount importance of this work may be illustrated by a few statistics obtained from The Statistical Year Book, 1897, which will also serve to show the important part which agriculture in all its branches plays in the material prosperity of this country.

In Canada 45 per cent. of the population is engaged in rural pursuits.

The railroads depend on agriculture for one-fourth of the freight they carry, and the canals one-third.

Canada's merchant marine depends chiefly upon the produces of the farms and ranges, and more than one-half of the total exports are agricultural products.

If our live stock and their products assume such large proportions, and their exportation forms such an important item of our foreign trade now, what may they not reach in the future? When, by the rising tide of immigration, our great fertile regions now unpeopled are brought under cultivation and made to yield of their abundance, it will swell the volume of exports several hundred per cent. more than they are to-day, both in animal and agricultural products. We can by very little thinking foresee the vast interests at stake in this country, which is destined to become the foremost food producing country on the globe.

The important part which our profession has to play in the development and preservation of this great agricultural wealth is not generally understood nor appreciated. I hope I may be allowed therefore to state a few facts and quote a few figures to show what resulted from the indifference displayed by those countries into which contagious diseases of animals had been allowed to be imported, and make a few deductions as to what the proper utilisation of the profession might have prevented. To fully understand the subject, we must bear in mind the inseparable connection that exists between the breeding and feeding of animals and prevention of disease and death among them—the stock raiser and the veterinary sanitarian. Likewise, it is incumbent on us to remember how essential to the success of the agriculturist is the success of his stock-raising department; artificial manures are useful, but the farmer must produce his manures on his own premises to be successful.

The more animals he keeps and the better bred they are, the larger will be his manure pile and his balance at the bank. Mixed farming is the only farming that pays in this or any other country. Animal breeding and feeding

directly enhance the value of the land per acre. Herds of horses, cattle, sheep and swine necessitate better cultivation ; the greater the quantity of manure the more the soil is enriched : fences and buildings must be kept in better order, and every member of the family, boys and girls, on such a farm find sufficient to do to give them employment at home and to induce them to remain there to assist their parents, very much to their own present comfort and future benefit.

What happier condition of life can be imagined than a well-doing farmer's home when all goes well, when crops are good, prices fair, and his animals undergoing the normal increase without losses from disease.

As a boy I have visited such homes in Scotland, and enjoyed the hospitality of the prosperous farmer who, year by year, as rent day came round, was prompt with his payment and had a respectable balance to his credit in the bank. I have seen his herd of cattle invaded by disease and his means of support curtailed ; in a year or two his cattle swept away by disease, himself worn in body and mind in vain efforts to nurse them back to health ; his outdoor work neglected ; his family dispirited, one after another leave the farm, and, before long, he being forced to quit it himself, the proceeds of the sale barely sufficient to pay the rent and meet his immediate demands. Such has been the experience of hundreds of farmers in the British Isles, and all due to the supineness of the Government in failing to carry into effect the warnings of the veterinary profession, more particularly at the date to which I refer of Professor J. B. Simmonds and the late Professor John Gamgee.

What is to be thought of the Australian colonies whose legistature proved so culpably negligent of the warnings from the experience of the mother country as to allow, for want of the adoption of preventive measures, the introduction of contagious pleuro-pneumonia, which led to almost equal ruin of Australian farmers and stock-raisers ?

The following statistics from "Fleming's Veterinary Sanitary Science and Police" will serve to illustrate what has happened where preventive measures were neglected.

Cattle Plague.—Great Britain 105,566, 279,023 reported sick, 233,622 died or were killed, 40,165 recovered.

Contagious Pleuro-Pneumonia.—In Great Britain, from 1834 to 1880 it is estimated that there perished considerably more than 1,000,000 head, valued at 60,000,000 dollars.

In Australia the losses during 13 years were about 30 to 40 per cent. of the whole number of cattle, or about 1,404,097, valued at 42,500,000 dollars.

Foot and Mouth Disease.—Although it is not a very fatal disease, it is very contagious, and usually affects 9-10ths of the animals in the district, and entails great losses from loss of flesh, loss of milk, resulting sterility, embarrassment of traffic, cost of nursing, cost of inspection, and other heavy expenses.

It is estimated that in Great Britain, during 1872, the money loss amounted to at least 65,000,000 dollars.

Tuberculosis.—In my opinion, this is the greatest scourge of the farm—sparing scarcely any species of our domestic animals, affecting more especially cattle, pigs, and poultry—intercommunicable from animals to man, and from man to animals. Insidious to a degree, incurable as a rule, invading our homes in the milk supplied for nourishment, the virulent bacilli working their deadly effects on our little ones, our invalid friends, or it may be our own bodies, well may we exclaim : "In the midst of life we are in death." No reliable statistics of the extent to which this fell destroyer exists in the herds of this country have been taken, no general testing of the cattle has been attempted, but of some 10,000 head tested, the percentage is small compared with older countries and more populous centres, yet sufficiently large to

render the responsibility of the Government onerous indeed. Fortunate it is that this disease, while communicated from cattle to the human subject readily when the milk drawn from diseased udders is ingested without sterilization, it is not readily communicated in any other way to any except to those who are in constant attendance on cattle suffering from tuberculosis of the throat or lungs, who are thus exposed to inhalation infection.

Apart, however, altogether from human infection, this disease is one which causes enormous losses in nearly every dairy country in the world, or wherever cattle are housed, and fresh cattle frequently brought into the herd, as is the case in most dairy herds. To these bovine scourges must be added contagious diseases or other species of domestic animals.

Glanders in Horses, if left unchecked, would decimate our horses, and cause, as it does in the old countries of Europe, serious losses.

Hog Cholera, which is a most virulently contagious and fatal disease. Twenty million dollars a year is estimated to be lost in the United States from its ravages.

Scab in Sheep, where sanitary measures are not understood, causes immense losses from loss of wool, from death, and expenses in dipping and caring for the diseased flocks.

What does it avail if the breeder spends valuable time and money in improving his flocks and herds if he is not protected by wise preventive measures from such diseases as would frustrate and nullify all his efforts? What though professors of dairying teach, and farmers adopt, the most complete systems of butter and cheese production, if the milk-supplying herds are suffered to sicken and die from preventable diseases?

As a matter of fact, the co-operation of the veterinarian with the farmer is indispensable to success in agricultural pursuits, not only to protect him from the destructive inroad of contagious diseases, but everyday ailments as well.

Gentlemen, in addressing, as I am, professional men whose life work is devoted to the preservation of the herds and flocks which constitute such a large proportion of the wealth of these two great agricultural countries, I need not enlarge on the important part which preventive veterinary medicine and veterinary sanitary science plays in the nation's progress and prosperity.

Need I remind you of the part your Alma Mater has played in preventing the introduction of contagious diseases in Canada. Some of you will remember our early struggles to get even permissive powers to stop cattle at Point Levis, which were *en route* from a foot-and-mouth-infected district in Britain—that was in 1875.

The owners refused to let them be detained, and this disease was introduced to the neighbourhood of Toronto and the eastern townships of Quebec, and spread to a considerable extent, giving rise to considerable loss and disturbance of trade. In 1876 the present quarantine station was opened in Fort No. 3, Point Levis, and from that date till now it has continued its protective operations, having successively to deal with foot-and-mouth disease and pleuro-pneumonia—neither of which diseases were ever allowed to extend not only beyond the quarantine, but not even beyond the buildings and yards in which the diseased animals were confined, and thanks to the foresight of the then Premier, the late Honourable Alexander McKenzie, to whom is due the credit of inaugurating the cattle quarantine of Canada on my suggestion, while his Department of Agriculture looked upon it as unnecessary and useless. Thanks also to the late Sir John A. McDonald and the late Hon. John Henry Pope, his Minister of Agriculture, whose advent to office in 1879 led to a considerable extension of the Levis quarantine and an extension of quarantine operations by the

establishment of quarantine at Halifax, St. John and other points in Western Ontario, as well as the inspection of export cattle and supervision of cattle-carrying steamships, also investigations, at Government expense, of domestic diseases of animals when supposed to be of a contagious nature.

I cannot leave this part of my subject without in an especial manner acknowledging the great service which the country has derived from the extension of quarantine and inspection to every part of the Dominion where such is needed, and the active interest taken personally in the work of the service by the present Minister, the Hon. Sydney Fisher, who, himself a thoroughly practical and successful agriculturist and a thoughtful student of animal diseases, does thoroughly appreciate the intimate relationships which exist between the farmer and the veterinarian, and how indispensable are the services of the latter to the former, more especially as regards preventive medicine and sanitary science.

So far my remarks have directed your thoughts to the past; no doubt you, like myself, would like to look to the future of your college.

As you are aware, owing to a variety of causes, more especially the introduction of electric motors and bicycles, and the resulting depreciation in the values of horses, and the reduction in their number which have occurred within a few years, it was generally supposed that we were entering on a horseless age, and many young men in consequence turned their attention to other studies.

Not to this alone, however, must we attribute the lessened attendance at our classes; as you are aware from the inception of the school, when as yet the curriculum of not one veterinary school in Britain, the United States or Canada exceeded the six months sessions—and not even at the Royal Veterinary College at London was there any matriculation examination—we commenced with a matriculation examination, and a curriculum extending over three winter sessions. This, of course, had the effect of keeping down the numbers, while the two year schools were crowded with students, who, if they did nothing else, at least paid their fees.

Thanks to the action of the United States Veterinary Medical Association, which refused membership to graduates of two year schools, and the banding together of veterinary teachers in an association for the purpose of getting all veterinary colleges in the States and Canada to adopt a three-year course, in which they have at last been successful, many illiterate young men were thus debarred entrance, and there has been a general falling off in the numbers of pupils at all the veterinary colleges. No doubt, also, in our case it is due in a great measure to the change in the curriculum of the Medical College from six to nine months' sessions, and the difficulty experienced in arranging concurrent lectures for both classes, medical and veterinary students, but more especially to our want of proper buildings and equipment as compared with other colleges, such as the New York State Veterinary Colleges in connection with Cornell University, on which about 150,000 dollars has been spent, and 50,000 dollars a year granted by the Legislature as endowment.

On this Continent at least a revolution has taken place in veterinary education and in veterinary practice. Public necessity demands the services of men of scientific education, equal in all respects to that of practitioners of the sister branch, human medicine. The advances in medical science, specially brought about by the discoveries of the micro-organisms which cause disease by microscopic and bacteriological research methods, necessitate more technical and expert training, and for this purpose much more expensive and elaborate buildings and equipment are required.

That such will be provided for this Faculty, in keeping with the other Faculties of McGill, I have no expectation; nor would I expect that we will ever be so fortunate as to see a veterinary college built, equipped, and

endowed at all equal to that of Cornell, nor would I advise such an expenditure. What I would like, however, to see established in connection with the university is such a college as is to be seen in Copenhagen, Denmark, to which I have referred in the narrative of my trip to Europe during last winter, from which I make the following extract:—

This college has been in existence for over a hundred years. It was commenced as a veterinary school, but has since, like the colleges at Leipsic and Halle, had the science of agriculture and dairying added to its curriculum. Veterinary science continues to be the major study, but the Government require and pay for teachers and professors in agriculture, dairying, stock breeding, forestry, surveying, botany, economic horticulture, anatomy, physiology, chemistry, including agricultural chemistry, physics, zoology, and bacteriology.

A few years ago the Government made an appreciation of about two hundred and fifty thousand dollars for the enlargement of the various branches, and nine thousand dollars a year is given for the payment of lecturers and assistants.

The professors are resident, have free houses, light, and fuel. They are paid besides eight hundred and sixty-four dollars a year, and an increase of one hundred and sixty-two dollars for every five years they remain in the college.

This college would require to be a modification of the Danish one and the Agricultural Department of the University of Halle, in Saxony, from the calendar of which I make the following extract. For further details I must refer you to the above-mentioned report.

THE PARASITE OF CANCER.

BY WILLIAM RUSSELL, M.D., F.R.C.P., ED.

Lecturer on Pathology, Royal Colleges School of Medicine; Assistant Physician to the Royal Infirmary, Edinburgh.

(*From the Scottish Medical and Surgical Journal.*)

RECENT papers have re-awakened interest in this country in the question of the parasitic organism of cancer, and the time seems opportune for a review of the question. It is not my intention here to argue in support of the infective nature of cancer, but I may state that increasing clinical and pathological experience only deepens my conviction of its infectivity. I am fully aware that many minds are ranged on the other side; they include some of my personal friends, but I console myself by remembering that it took some of my friends almost a decade to accept the bacillus tuberculosis as the etiological factor in tubercle. Accepting as I do the doctrine of infectivity my present purpose is confined to the question of the infective element.

Up to 1890 Albarran, Darier, Thoma, Wickham, and Sjöbring had described structures in the cells of cancer which they believed to be parasitic, and all of them, with the exception of Thoma, regarded the parasite as belonging to the Protozoa.

In 1890 I published a paper in which I described what I believed to be a parasitic organism in cancer. The organism was described both in an extra-cellular and an intra-cellular form. They were held by me to be Blastomycetes, and I provisionally called them "Fuchsin Bodies." The subject was taken up with considerable ardour, and it was found that bodies similar in appearance to the *extra-cellular* forms described occurred in morbid conditions other than cancer. Some of the observations by others were correct, some were wrong, as sufficient allowance was not always made for the care with which I had excluded the possibility of the extra-cellular forms being some of the things they were said to be. Still the fact remained that

identical bodies were found in other morbid conditions, and this fact became a stumbling block. After this other work appeared which dealt with the *intra-cellular* structures in cancer cells, and in which it was attempted to differentiate the intra-cellular appearances into organisms, degenerations of cell protoplasm, or degeneration of cell inclusions, not parasitic. The organism was regarded by these observers as a sporozoon, or at all events an amæboid parasite. A considerable array of observers, including Bergonzini, Klein, Raum, Hauser, Shattock and Ballance, Goldmann, Rossi, Touton, Mantegazza, Pelagatti, &c., contended that the appearances described were the result of degeneration of one kind or another, or of something else. The variety of explanation has been great, and it is not going too far to say that the effect was that the current view has been that all work contending for the parasitic nature of the appearances was either wrong or wrongly interpreted. When Ruffer brought forward his work at the annual meeting of the British Medical Association, I stated that I was familiar with all the intra-cellular appearances, and that his preparations were so beautiful that it was vain to continue the subject from the morphological standpoint, as nothing more could be made of it; that the two opinions would continue to be held, namely (1) that they were parasites, and (2) that they were merely degenerations. Experimental work by those whose circumstances permitted them to pursue the subject could alone settle who was right.

Within the past few years experimental work has been gradually determining, as it seems to me, this question. It is to investigators in Italy that we are indebted for its elucidation, and it is mainly with the view of bringing the Italian work somewhat fully before the profession in Britain that this paper is written.

The honour and credit of the experimental work belongs, in the first place, to Professor Francesco Sanfelice, Director of the Institute of Hygiene in the Royal University, Cagliari. Before entering on an account of his work, it is necessary to state that, when I published my paper, the dictum of pathologists was that the blastomycetes were not pathogenic, and this authoritative dictum ruled men's minds as dicta of the kind usually do.

Sanfelice's Discovery of a Pathogenic Blastomyces.

Sanfelice's attention seems to have been directed to cancer by what we call chance. He was engaged investigating the morphological and biological characters of blastomycetes when he found that one of these was pathogenic, and was interesting not from this fact alone, but from the further fact that its morphological resemblances to the bodies which had been described as cancer coccidia. He then, apparently, looked more fully into the literatue of pathogenic blastomycetes, and from this it appears that Neumayer and Raum had both experimentally inoculated animals with pure cultures, but without results of importance. Busse had described a case diagnosed as sarcoma of the tibia, in which numerous cells were found, which Löffler cultivated and pronounced to be blastomycetes. Experimental inoculation with these only proved that the parasite was capable of reproduction in the animal body. Mafucci and Sirleo described a blastomyces obtained from a guinea-pig with which they were able to inoculate other guinea-pigs.

This seems to have been the position as regards pathogenic blastomycetes, when Sanfelice had begun the investigations to which special reference is to be made.

The special organism with which Sanfelice experimented he has called the saccharomyces neoformans. Inoculation of guinea-pigs with it showed that wherever inoculation was performed, the result was a general infection of the animal with the formation of tumours, consisting partly of masses of parasite

and partly of proliferation of the cells of the part. The infection spread by the lymph and blood channels and did not cause inflammation. The animals usually died within a month; and he noted that in the tissues the parasite had a somewhat different appearance to what it had in cultures. The appearances of this parasite in the tissues of guinea-pigs had a great resemblance to the bodies found in human malignant growths by many observers. Most of these authors believed these bodies to be coccidia, and it was by Russell alone that the bodies were believed to be blastomycetes. In a further paper he continues the account of experimental inoculation of other animals. In mice, inoculation led to a rapid infection with great multiplication of the parasite. In white rats the process was slower, the animals dying after one and a half to two months, and with more reaction on the part of the tissues. In rabbits, only two out of 12 inoculated died, and in the fatal cases the parasites were fewer in number, but there was more proliferation of the tissue elements than in the other animals. Out of 30 dogs inoculated, only two developed a tumour at the point of inoculation and metastasis in internal organs. One of these dogs was killed after four months, the other died after 10 months. The pathological changes in the first dog consisted in the development of a nodular tumour in the mammary gland where the inoculation had been made, with enlargement of neighbouring lymph glands. The changes were like those of a sarcoma. Very few parasites were found, and no cultures could be obtained from any of the tissues. In the second dog the growths were different, but I have so far failed to find an account of the anatomical changes present in it. In fowls the parasite presented a different appearance to the appearance in the other animals.

The Morphological Characters presented by the Blastomycetes when inoculated into Animals.

In a paper dated September, 1897, on the "Experimental Production of Russell's Fuchsin Bodies," Sanfelice says that until that time among the animals he had inoculated with saccharomyces neoformans it was only in dogs that the blastomyces appeared in the typical forms as described by Russell under the name of "fuchsin bodies." Russell described them as certain structures which he could almost always demonstrate in carcinomata. They were almost spherical, 4–12 mm. in diameter, homogenous, and without a trace of structure. They lay almost always in groups of 3–20 elements; some of them were bounded by a thin rim of cell protoplasm, while the majority lay in a clear area in a kind of vacuole. They were met with either in the cancer cells or in the stroma. Russell believed these to be parasites, and classed them under the blastomycetes or sprouting fungi.

Sanfelice goes on to say that since the previous year he has been inoculating various animals with pure cultures of the saccharomyces neoformans, and had noted that in certain cats which died after some months the blastomycetes inside the tissues took the typical forms of Russell's bodies, and in view of the appearance of the works of investigators who denied that Russell's bodies were blastomycetes he proceeds to report on the manner in which the parasites appear in these particular animals.

He contends that it is only by experiment that a positive result can be arrived at, and it is owing to the fact that observers have depended on morphological features and staining reactions that the majority of authors have arrived at erroneous results.

When he ascertained that after injection of pure cultures of saccharomyces neoformans in cats, typical Russell's bodies appeared in the tissues, he investigated the tissues of normal cats, but in no case found Russell's bodies.

After inoculation with saccharomyces neoformans, the fuchsin bodies were invariably found, and moreover presenting the same form and arrangement, and with the same reaction to colouring material as the bodies which Russell and others had described as occurring in malignant tumours.

Sanfelice inoculated 10 cats of different ages in the peritoneal cavity, some once, others oftener. When the cats died, on an average after three months, numerous sections were made of all organs. The pieces of the tissues of normal cats were fixed in the same way as those of the inoculated animals. In this way he demonstrated the fact that Russell's fuchsin bodies appeared in the tissues after the inoculation of cats with saccharomyces neoformans, and he describes the structure and arrangement and properties of the bodies he found so as to prove their identity with the bodies regarded by Russell as blastomycetes, and by his opponents as products of cell degeneration.

In the inoculated cats the fuchsin bodies appeared in greatest number in the lymph glands of the mesentery, in the spleen, and in the bone marrow. They were easily recognised, being perfectly round in form, and in size varying from that of a micrococcus to that of a leucocyte. As regards structure, some of the bodies show a differentiation of the chromatic substance, while others take on the stain homogenously, with more or less intensity. The bodies with differentiated chromatic substance possess either a kind of circle or an intensely coloured membrane with a less intensely coloured central part, or they show a deeply coloured centre surrounded by a circle only faintly coloured, or not coloured at all, and varying in breadth. The homogeneously coloured forms take on a more or less deep colour.

In many of the parasites multiplication by budding may be seen, in the same way as is seen in artificial cultures. The buds grow from the smaller elements as well as from the larger, and may or may not remain attached until they attain the full size.

In the tissues of cats the blastomycetes are found either lying free or inside the cells. The free forms lie between newly-formed cell elements, and usually in groups, seldom singly. The number of parasites in one group varies. Sanfelice has counted as many as 30 in one group. Sometimes these are so closely clustered as to present a mulberry appearance, sometimes they lie separated from each other, and, moreover, at such equal distances that they have the appearance as if some cement substance kept them at equal distances and prevented direct contact of the deeply-coloured substances. Occasionally one can see quite distinctly that this apparent cement substance is formed from the circles or hyaline membranes, which, by touching each other, conceal the outlines of their peripheries. In some groups of blastomycetes the hyaline membranes are very apparent, and their borders are distinctly seen.

The endo-cellular parasites are usually much smaller than the free forms. If there are only one or two in a cell they are moderately large; if many, they are small. The number of enclosed parasites varies, as do the free forms, and they present the same appearances. According to the position in which the cell containing the parasites is seen by the observer, the nucleus appears either pushed to one side, or in the centre of the cell, surrounded by parasites. It often happens that small parasites in considerable numbers are found lying close together in a ground-substance, without any nucleus being visible. It is possible that in such cases the nucleus is lying under the parasites, so that the eye of the observer cannot detect it. Another feature is the fact that they are found in the neighbourhood of young, newly-formed cells, and do not appear in the parts where the cells are undergoing degeneration. He is unable at present to say why the parasites should appear in the form of fuchsin bodies only occasionally in dogs, though constantly in cats. He concludes by stating that this communication is intended to prove:

(1) That all authors who contend that Russell's fuchsin bodies are not blastomycetes have not hitherto brought forward experimental proof that they are cellular degenerations.

(2) That through the inoculation of cats with pure cultures of saccharomyces neoformans, the typical bodies are produced which have been described by Russell and others as occurring in malignant tumours in man, and in certain chronic inflammatory processes.

(3) That these fuchsin bodies are not found in normal cats, but only appear in these animals when they are inoculated with pure cultures of saccharomyces neoformans, or with pieces from the tissues of cats, containing the typical forms of Russell's bodies.

A coloured plate, illustrating the various forms of the parasite, is appended to this paper.

It may simplify this question to say here that Sanfelice states that the pathogenic blastomycetes, hitherto cultivated, closely resemble one another on artificial media and in morphological appearances, while at the same time their pathogenic action varies widely.

The experimental production of epithelial tumours and metastatic epithelial growths.

Having settled the morphological facts, the next still more interesting point was to ascertain whether the injection of these blastomycetes into animals susceptible to malignant tumours would bring about the formation of neoplasms similar to the malignant tumours observed in man. Sanfelice approached the solution of this problem by passing the blastomyces with which he was experimenting through a number of dogs, that is from dog to dog. By this method he arrived at positive results in two cases. In one of these the dog had been inoculated in the two posterior nipples, with the blastomyces which had been passed through several dogs. After a slight inflammatory reaction at the site of inoculation, the nipples remained apparently normal until about a month after the operation, when signs of a neoplastic process became evident. The animal died ten months later, with marked cachexia, tumours in both teats, showing retraction of the nipples and tacking down of the skin, and secondary growths in the inguinal and abdominal lymphatic glands. All these showed the typical structure of adeno-carcinoma. Sanfelice's colleagues, Biondi and Carboni, confirmed this opinion. Numerous illustrations of the naked eye and microscopical appearances are appended to this communication. No parasites were observed in the centre of the primary tumours. A few were observed in the peripheral part of the primary tumour, and in the metastases in the glands. He could obtain no cultures from any of these growths; the explanation he offers of this is that when the parasite has so grown accustomed to its surroundings as to take on the typical characteristics of Russell's bodies, and to become capable of producing malignant tumours, from that time it becomes incapable of growing in artificial media. (He evidently means by this the ordinary media on which he had grown his saccharomyces neoformans). In order to be grown artificially, the parasite must occur in the form in which it occurs in guinea-pigs, etc., that is, in the form usually found in infections running a rapid course, and seldom in those running a more prolonged course. If blastomycetes are isolated from malignant growths of man or animals, he holds that they must have been present in the growth in both forms.

The foregoing positive result obtained by Sanfelice is so important that the other cases may also be given. A dog was inoculated in both testicles; after one and a-half months, swelling of the testicles and penis became evident, and gradually progressed. The animal died after five months from

accidental poisoning. The animal had been seen during life by various authorities, among them Dr. Marino-Zuco, of Rome, who agreed that the growths were of a malignant nature. The examination of the parts showed adeno-carcinoma of the testicles, with secondary growths in the neighbourhood of the penis and glands. The parasites were much more numerous than in the previous case, this being, he considers, due to the earlier stage at which the animal died. He explains that the longer the parasite is present in the tissues, the fewer they become. They presented the typical features of Russell's bodies, and, as in the previous case, no cultures could be obtained from the tumours.

Further inoculation experiments are given, but these need not be given in detail. It is sufficient to state that a few positive results were obtained by inoculating dogs from the new growth in one of the cases referred to above.

Inoculation into the Circulation and Abdominal Cavity of Dogs and Cats.—Inoculation of dogs in the jugular vein led, in the course of one to one and a-half months, to connective tissue changes in which the parasite was present in small numbers, and in its cultivable form. It was by intraperitoneal injection from dog to dog that he obtained the parasite which produced the epithelial growths already referred to. In the case of cats, he found that the saccharomyces neoformans inoculated into the abdominal cavity or veins brought about the same changes as he had observed in the bodies of dogs inoculated in the same way. In the case of cats, he confirmed his opinion that when the parasite had been long enough in the body to assume the typical forms of Russell's fuchsin bodies, they were no longer cultivable in artificial media. If, however, the cats were killed soon after inoculation, cultures could be obtained, the parasite then presenting the forms which occurred in guinea-pigs and rabbits, where the infection ran a more acute course. One of the conclusions he draws from his experimental work with the saccharomyces neoformans is that it appears in the tissues of animals in two forms. In one form it possesses a capsule, and is cultivable in artificial media. In the other it has no capsule, is identical with the fuchsin bodies of Russell, and cannot be cultivated in artificial media. This second form is only observed in the organism when the parasite has lived in it for some time.

Roncali's Histological Contribution.

Professor Roncali, of Rome, has taken a leading part in the appreciation of Sanfelice's work, and has published important papers on the histological appearances in some malignant tumours in man. He was attracted by the fact that, in a case of adeno-carcinoma of the ovary, there were appearances identical with those described by Sanfelice, and he came to the conclusion that they were due to the same cause, the presence of a parasitic blastomyces. He also noted the resemblance between the appearances in his case and those described in cancer and regarded by some authors as parasitic. He acknowledges, with scientific justice and frank generosity, that all authors had seen real parasites, but they had erred in assigning them a place in the animal kingdom. He thinks they were led by a false prejudice, wishing to see Sporozoa. This circumstance had proved, he thinks, the inexhaustible source of all the errors made. He records three cases, two of adeno-carcinoma of the ovary and one of adeno-carcinoma of the colon, with secondary involvement of the great omentum and mesentery. The detailed description of these cases it is unnecessary to reproduce. In all he found the same appearances, and he has no doubt as to their nature. He describes and figures the parasite both as extra-cellular and intra-cellular. From one of his cases he obtained cultures of blastomycetes. Inoculation of guinea-pigs with these

cultures caused death of the animal, and the production in many of the organs of little whitish nodules. These were of the nature of granulomata, only with more of the characters of new growth than of inflammatory products. The nodules showed many parasites, young and degenerated, and Roncali found them to be identical with a blastomyces isolated by him from an epithelioma of the tongue. Roncali undertook, and records a large series of experiments to prove, that the parasites had not reached the tissues from the air after removal from the body. He showed by these that dead tissue, whether of normal organs or of tumours, was not suitable for promoting the growth of blastomycetes, and that blastomycetes show no preference for the tissue of malignant growths. Having disposed of the question of contamination, he then discusses the question of the etiological factor in human neoplasms, and his conclusion is that the generic connection between the blastomycetes and malignant tumours is proved.

Work of other observers.

Busse cultivated a blastomycetes from a sarcoma, as has been already referred to. Kahane got pure cultures of a blastomyces from a cancer of the uterus. Mafucci and Sirleo have a paper on the blastomycetes as the cause of origin of malignant tumours, but their results are mainly negative, while not denying the possibility of a connection. An important case is recorded by Corselli and Frisco of sarcoma of the mesenteric glands, from which they were able to isolate blastomycetes, which produced similar growths in guinea-pigs, rabbits, and dogs. They got pure cultures of blastomycetes in the patient's lifetime, and after death from fluid from the abdominal and thoracic cavities. Curtis had a case, referred to by Sanfelice and Roncali, of a myxomatous tumour in a man from which he obtained cultures of a blastomycetes, and, by inoculation, produced a tumour in a rabbit.

Conclusions.

To anyone going carefully through Sanfelice's work, there is only one opinion possible, and that is, that it is a very careful and beautiful piece of investigation and research. To me it points in only one direction. The links in the chain of evidence are simple and strong, and may be thus summarised. Investigating blastomycetes he finds appearances similar to those described as occurring in cancer both inside and outside the cells. Working on these lines he familiarises himself with the appearances presented by the parasite in the tissues and organs of different animals. He finds that in different animals the pathogenic effect varies from a somewhat rapid infection with great proliferation of the parasite down to a much less acute infection. In dogs, by inoculating them into the peritoneal cavity, he recovers the parasite from the lymph glands and passes them through another dog, and so on. Having in this way modified the parasite by the chemico-vital influences in the dog's body, he inoculates the mammæ and the testicles of dogs with the modified organism, and finds that it produces epithelial growths with metastases.

The success of others in cultivating blastomycetes from tumours, mainly malignant, adds confirmation to Sanfelice's results. Roncali is one of these, but his confirmation is largely from the histological standpoint, and he was avowedly greatly aided in his observations by his acquaintance with the appearances in the tissues produced by inoculation with the saccharamyces neoformans as followed by Sanfelice.

I have avoided reference to controversial questions, although Sanfelice and Roncali somewhat warmly criticise the work of those who considered the

structures described as degenerations. Those interested in that negative aspect of the problem will find it fully referred to in various of the papers mentioned below.

It seems almost needless to add that there remains abundant work to be done in this important and attractive field. One is pleased to see that a British worker, whose name is already associated with work on the intracellular forms in cancer, is obtaining positive experimental results. That blastomycetes occur in malignant growths appears to be established. That the sporozoa may be the cause of some malignant new growths is not necessarily quite put out of court, but their cultivation will, I take it, be a still more difficult matter. With the amount of positive work before us the evidence is incontestably in favour of the blastomycetes.

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NEW TRACHEOTOMY TUBE.

(PATENTED.)

To the Editor of THE VETERINARY JOURNAL.

SIR,—The accompanying illustration represents a new form of Tracheotomy Tube, which Messrs. Arnold & Sons have made for me, and one which I have found to answer every purpose.

Its advantages are simplicity, lightness, and effect. It is made in two parts as shown in drawing, and is so easy of insertion that it can be removed and cleaned by the most ignorant. It is also provided with flanges which effectually keep the growth of proud flesh back, which generally accumulates more or less and causes trouble.

It is made in three different sizes in length, 1, 1¼ and 1½ inches, and two different sizes in bore, 1 and 1¼ inches, and of a metal which does not corrode or oxodise.

The sole manufacturers and patentees are Messrs. Arnold & Sons, West Smithfield, London.—Yours etc., JOHN COLEMAN, M.R.C.V.S.

Notes and News.

A FIFE VETERINARY SURGEON DROWNED.—The body of a well-dressed man was found lying on the Clyde shore, in front of Levengrove Public Park, at Dumbarton, on Thursday afternoon. It was attached to a stone, and is said to have been found floating in the River Clyde opposite Dumbarton by some rafters, who were taking a raft of wood up the river, but they did not acquaint any person of their find. Later in the day information was sent to

the Dumbarton Police, who had the body removed to the mortuary. It was in an advanced state of decomposition, and appeared to have been in the water between six and eight weeks. The deceased was fashionably attired, wearing a pair of riding trousers, leggings, fine kid boots, and a pair of fine gloves. From letters and papers found in the pockets it was presumed to be that of a veterinary surgeon belonging to St. Andrews, named Robert Graham Robertson. The identification has been confirmed. Mr. Robertson, who lived in lodgings in St. Andrews, left there about three months ago to visit his wife, who meantime was residing at Dumbarton. They stayed in the Lennox and Elephant Hotels. It was understood there that he had returned to St. Andrews. Mr. Robertson was a smart, active man, about thirty years of age, and well up in his profession; and it was only lately that his friends became anxious at not hearing from him, or getting any answers to their letters. He had been practising his profession in St. Andrews for upwards of a twelve-month. Previously he was in business as a veterinary-surgeon at Alloa, and is understood to be a native of Dunfermline, where his parents reside.—*The Edinburgh Evening Dispatch*, May 13th.

EDINBURGH "VETS." DIFFER.—Before Bailie Kinloch Anderson in Edinburgh Police Court, May 1st, Robert Bennett, stable manager, residing at Longstone, and Daniel Buchan, carter, residing at Slateford, were charged with having, on the 24th of March, in Rose Street, cruelly ill-treated a mare by causing it to draw a cart while suffering from two sores on the back, contrary to the Act for the Prevention of Cruelty to Animals. They pleaded not guilty, and were defended by Mr. Peter Morison, jun., S.S.C. John Walters, inspector of the Society for the Prevention of Cruelty to Animals, said his attention was drawn to the mare by seeing it twitching, and apparently very uneasy. He examined it, and found two sores on the back under the saddle, about two or two and a-half inches in diameter. The saddle was not "chambered," and was very dirty with matter. Buchan, who was in charge of the mare, refused to give his name when asked to do so, and also refused to take the horse to Clyde Street to be examined. The mare was afterwards taken possession of by the police, and examined by a veterinary surgeon. Constable Kelman corroborated. George Thomson, veterinary surgeon, said he examined the mare in the Waverley Police Station, and found the two sores under the saddle. One of them was a mere skin sore, but the other was a suppurating and very irritating sore, and was causing great pain. The animal was quite unfit for work. It must have been suffering for a few days. For the defence, Alexander I. M'Callum, veterinary surgeon, said he had examined the animal at Buchan's request. He knew her "character," and she was a very wicked and vicious animal. The saddle was properly "chambered," it was not dirty, and there was no matter upon it. The animal was, in his opinion, quite fit for work. John E. Grey, veterinary surgeon, corroborated, describing the alleged sores as old scars. After the examination of another witness for the defence, the Bailie found the charge not proven.—*Edinburgh Evening Dispatch.*

DALKEITH BURGH COMMISSIONERS—AN EXPERT'S FEE.—An account for one guinea was received Mr. M'Intosh M.R.C.V.S., for his report on a case where he was called in by the sanitary inspector to give his opinion on the condition of certain sheep which had been seized.—Mr. Cochrane asked if this account was for the case in which Mr. M'Intosh first condemned the sheep and afterwards changed his opinion.—Bailie Chisholm said that in this case Mr. M'Intosh condemned the sheep and then declined to go into the witness-box to back up his opinion.—Mr. Dalgleish: Does he charge a fee for each opinion? He thought that it should be maintained that, unless Mr. M'Intosh could back up his opinion, no fee would be given him.—Mr. Storie said he would object to give a fee in a case like this. Mr. M'Intosh apparently

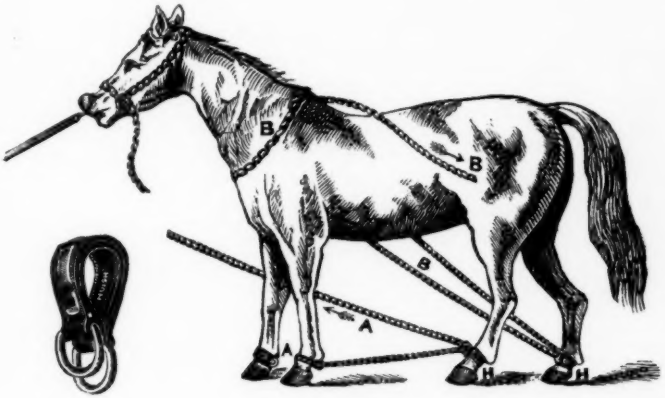
condemned the sheep first, and then afterwards declined to go on with the case because he thought it would be detrimental to his position and bring him into discredit with his patrons.—Bailie Chisholm said the fact of the matter was that Commissioners were put in a peculiar position in the case in question. They had to decline to prosecute because Mr. M'Intosh would not consent to go into the witness-box in support of his opinion.—Bailie Lucas said that the whole case was a peculiar one. The sheep in question were greatly emaciated, and not in a fit state for human consumption. But at the same time the difficulty they had to contend with was, did the fact that the sheep were so greatly emaciated as to be practically skin and bone, constitute a case for prosecution under the Act? The committee considered that they had not a strong case to go to court with.—Mr. Storie said it seemed unsatisfactory that Mr. M'Intosh should give first one opinion and then another in a matter of so much importance.—Mr. Handyside said that they had not heard Mr. M'Intosh's explanation of the matter. It might be that after having heard how the sheep were fed sufficient reason was given to account for their emaciated condition. He did not think Mr. M'Intosh was at all anxious to be called in as veterinary surgeon for the burgh.—The Clerk said not only did Mr. M'Intosh apply to be appointed one of the veterinay surgeons under the Act, but he complained that he was not getting his turn. Ultimately, the account was passed for payment.—*The Dalkeith Advertiser*, Thursday, 13th April.

EDINBURGH TOWN COUNCIL.—A meeting of the town council was held this forenoon—Lord Provost Mitchell Thomson presiding. Through this is Assembly week, a minister was not forthcoming to give the usual opening prayer. The Lord Provost said he did not mean to move the disapproval of the minutes of 9th May, but he had received information as to some of the granolithic pavements passed at last meeting, which he could not disregard. He merely mentioned this as he wished to have an opportuuity of personally inspecting them and to keep his position open for the next meeting, when the minutes came up again for approval. Mr. Carmichael asked when they might expect the report on the Portobello Improvements, either on his own remit or Councillor Harrison's motion. The Town Clerk said the report would be before the Lord Provost's Committee next week, and it would be before the council in due course Dean of Guild Ormiston was appointed a representative on the General Examining Board of the Society of Ordained Surveyors. A representation by Principal Dewar was submitted, intimating that Professor Thomson had resigned the post of lecturer on zoology and botany at the Royal Dick Veterinary College. Mr. Waterston asked when they would have an opportunity of discussing the Dick College affairs. They saw from the account that this institution was not in a healthy condition. The Lord Provost said he did not think this was the time to discuss it. The Lord Provost asked that this letter should be remitted to the Lord Provosts' Committee, and it would afterwards go to the Dick Committee. Mr. Waterston said if he was not to get any further answer he would move that it be not recommitted. The Lord Provost: What do you want? Mr. Waterston said the institution was not keeping its position, it was deeply in debt, and he would like to know what was to be done to make it solvent or wipe it out of existence. The Lord Provost said the proper time to raise the question was when the accounts came out. Bailie Kinloch Anderson said he did not think the statements Mr. Waterston made should be accepted as correct. The institution, like many others, had had its fluctuations, but this year there had been an increase of students. Sir James Russell said the addition of a year to the medical curriculum had affected all medical institutions, and the Dick College, like the others, was beginning to recover from that. The remit was then made.—*Edinburgh Evening Dispatch*, May 23, 1899.

IMPROVED SPRING HOBBLES (*Registered*).

Suggested by Reginald Over, M.R.C.V.S., and made by C. H. Huish, 8, Fisher Street, Red Lion Square, W.C.

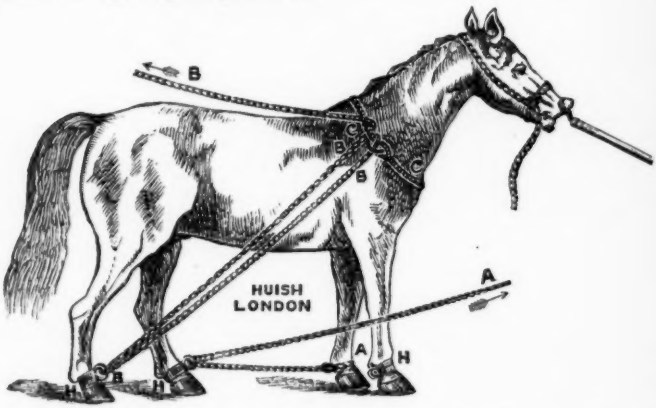
For use in casting horses of all kinds and ages, and for any operations, but especially for colts for castration. The special advantages of the Hobbles are that they are strong, very compact, light, most easily applied, and do not require any fastening, as they have a horse-shoe-shaped spring which simply clips the Hobble round the leg. The spring is practically everlasting, as I am now using a set which have been in constant use for seven years and are as good as ever. They are easily applied to unbroken colts, and will be found invaluable to veterinary surgeons still casting their colts for castration, etc., as a pair of the Hobbles may be used in connection with a collar rope, making the rope run more freely, casting the animal more smartly, and preventing any chafing of the heels. If I am not taking up too



much of your valuable space, I should like to describe what I have so far found to be the easiest, quickest, and safest method of casting colts for castration. First, you require three Spring Hobbles, and two ropes about 10 feet long, with a loop on one end of each; place your colt upon the position on which you intend to cast him and apply a twitch; now take one of the ropes B, pass the loop end round the colt's neck, and form a collar by threading the loop and making a knot which will not run up, the knot must be on the off side of the neck, now put a Hobble on the off hind leg and pass the end of the collar rope B through it and then back through the collar, passing the loose end B over the colt's back to the near side, and there let it remain for the present.

Now noose the other rope A round the near fore pastern, put a Hobble on near hind, and pass A from the near side through Hobble under the colt's belly to the off side. This is the rope which really casts the colt. Another Hobble is now put on the off fore leg, but this Hobble is not threaded until after the animal is cast. Now place your men. One good man at the head,

with instructions to keep the animal's head straight out as soon as he is cast; one man at rope B on the near side. This is not absolutely necessary, as B is not pulled until the animal is down. So, in the case of a very bad-tempered colt, rope B may be lelt off until the animal is cast and the other legs fixed. Now place yourself and oneman on the off side, on rope A and pull well forwards, and the colt will quietly drop down, with his near hind quarter touching the ground first, especially if the man at B gives the colt's tail a pull to the near side at the same time. Now thread the rope A through the off fore Hobble, pull these three feet together, and fasten the rope by hanking it round one of the pasterns. Now rope B should be pulled, and the off hind pastern drawn up and fastened to the collar. The end of rope B may now be passed above the off hock, and bound round so as to hamstring the animal, and thus prevent the leg being straightened out.



This method will be found much more easy to perform than describe, and the animals always fall upon the same ground upon which they stand, they are quickly fastened, perfectly safe, and do not distress either themselves or the operators.

Communications, Books, Journals, etc., Received.

Veterinarian; Record; British Medical Journal; Lancet; Report of the Bombay Veterinary College for year 1897-98; Chemist and Druggist; Bulletin of The John Hopkins Hospital; The Journal of Comparative Medicine and Veterinary Archives; The Scottish Medical and Surgical Journal; American Veterinary Review; Cattle Tuberculosis, by T. M. Legge, M.A., M.D., D.P.H.; The Public Health Journal; The Journal of the Jamaica Agricultural Society; The Surveyor; The Photogram; Practice of Equine Medicine, arranged with questions and answers, by Henry D. Hanson, D.V.S.; Queensland Agricultural Gazette; Petersburg Veterinary Society's Journal; C. H. Huish, H. J. Dawes, H. Locke, C. T. Kingzett, F.I.C.; Irish Times; Bulletin U. S. Department of Agriculture—Sheep Scab; Tuberculosis in Dairy Stock, R. A. S., England; Revista Veterinaria (Vitoria); La Riforma Veterinaria (Naples); Recueil de Médecine Vétérinaire (Alfort); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); Deutsche Thierärztliche Wochenschrift (Hannover and Karlsruhe); La Clinica Veterinaria (Milan); La Revista Veterinaria (Buenos Aires); Agricultural Journal (Cape Town); Bulletin de la Société des Sciences (Bucarest).